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Address.

REMARKS ON ADVANCES IN GYNECOLOGY DURING THE LAST YEAR; SENILE ENDOMETRITIS.

CHAIRMAN'S ADDRESS BEFORE THE SECTION ON OBSTETRICS AND DISEASES OF WOMEN, AT THE FIFTY-FIFTH ANNUAL SESSION OF THE AMERICAN MEDICAL ASSOCIATION, AT ATLANTIC CITY, N. J., JUNE 7-10, 1904.

L. H. DUNNING, M.D.

INDIANAPOLIS.

Before beginning my address, I desire to thank the members of the Section and to express to them my high appreciation of the honor they have conferred on me in electing me chairman of the Section for the year. Mindful of the obligations resting on the chairman of this Section, I have used my best endeavor to advance the interest of the Section, and to assist in the preparation for this session of a program worthy of the occasion.

If we have succeeded in this endeavor, a large share of the credit must be accorded to our secretary, Dr. C. L. Bonifield. His labors have been faithfully and efficiently performed, with perseverance and cheerfulness. I commend his example to all future secretaries. It will be observed on perusal of our printed program that we have been able to obtain twelve papers on obstetric subjects, besides several others which have an indirect bearing on the same subject. For valuable suggestions relating to the arrangement of the program and assistance in obtaining obstetric papers, I wish to thank our esteemed member, Dr. C. S. Bacon.

THE PROGRESS OF GYNECOLOGY.

It is not my purpose to indulge in extended remarks on the progress of gynecology during the last year, as master minds have already successfully undertaken the task of writing its history. One seeming fact has impressed itself on me as I have studied this history. It is that there has been less published than usual, during the year, relating to new operative procedures. The year seems to me to have been one in which a large amount of successful surgery has been done, but one in which the struggle has been to seek out and find the best indications and methods. There has been also much earnest effort to solve some of the difficult questions of etiology and pathology as they relate to diseases of women.

These are right tendencies, and will assuredly appeal to right-minded persons everywhere. There are still many difficult and important questions demanding solution at our hands, and it seems to the writer not inappropriate to indicate a few of them at this time. Those mentioned may not be the most important, but are such as have forced themselves on me during the progress of many years of active work as a general practitioner and as a gynecologist.

Our method of treatment must be based on our ideas of etiology and pathology, so that the first effort of the gynecologist should be to discover, so far as possible, every cause of disease of women, and to endeavor to obtain a correct understanding of the morbid processes existing in any given case, and in all cases. Fortunately for the present age, the activities of physicians in the past have resulted in the establishment of a well-nigh perfect classification of diseases, with a good nomenclature and a very clear understanding of the symptoms and course of the various diseases. Our debt of gratitude to our predecessors is immeasurable. As observers and classifiers of facts, the physicians of the past were fully equal to those of the present day. They have, however, left for us to solve many a knotty question, especially those relating to the causation of disease and the morbid processes induced by the same. I do not need to cite instances. You are familiar with them. We have all witnessed the struggles to discover the cause of cancer, of epilepsy, of the development of neoplasms, of eclampsia, of the growing sterility in the class of educated women. And so, too, have we witnessed the efforts to find not only the cause but the pathology of painful menstruation, of the perplexing pain in the ovarian region usually denominated ovarian neuralgia, of the blighting of organs, and the lack of co-ordination of the nervous system. In each one of these morbid conditions, or distressing signs of disease, there is a fruitful field for investigation.

Many of the sources of infection have been found, their disastrous results ascertained, and the methods of prevention and cure are becoming known. In the labors of Jenner, Pasteur, Koch, Lister, Tate and others, humanity has been greatly blessed. They have not only been benefactors of the world, but have given our profession immortal fame. McDowell's and Sim's names should be added to the list of benefactors. The achievements of all these great men came not by chance but by deliberate effort. In like manner shall appear the findings of the present and future physicians, for we discover that which we seek to find, more perhaps than we at first thought, for our vision enlarges and our understanding quickens as we advance.

I have been incited to give utterance to these thoughts because of one or two pessimistic papers and a few remarks I have listened to during previous meetings of this section. So long as the world stands there will be unsolved problems, and a suffering people waiting for their solution. The moral is, let each man find an unsolved problem within the scope of his attainments, and then set himself deliberately and persistently to the task of its solution.

SENILE ENDOMETRITIS.

The scientific subject I have chosen to discuss at this time is "Senile Endometritis," and it is selected because I believe it has not received the attention at the hands of practitioners and authors its importance demands. There seems to prevail a mistaken idea that endometritis affecting women before the menopause disappears after that period, and that should there be by chance a case prolonged beyond the climacteric, it is of little importance and easily cured. Such is not the invariable rule. It is true endometritis after the menopause is not of so frequent occurrence as it is during the childbearing period, yet is not uncommon, as evidenced by the fact that out of 464 consecutive private cases of disease of the reproductive organs recorded in my case-book, there are histories of 15 cases of senile endometritis of sufficient severity to bring the patients to a specialist for relief. The complications of the disease are in the main different from those in the ordinary cases of endometritis. Its course is more protracted, and the sufferings of the patients marked and characteristic, so that the writer believes senile endometritis should be treated as standing in a separate class.

Clinically, we observe two forms of the disease, classified according to the intensity and duration of the inflammation, viz., the acute and the chronic. The acute form results from primary infection or from an exacerbation of the chronic form of the inflammation. I have observed a number of cases of acute senile endometritis, due to gonorrheal infection. In these instances the vagina was involved first and later the endometrium. In one case in which there was also mixed infection, the inflammation extended beyond the interior of the uterus into the tubes and ovaries and to the pelvic peritoneum. Inasmuch as this raises a question which has not been much discussed heretofore, I have thought it best to introduce the history of this case. It is as follows:

CASE 1.—Mrs. A., aged 54 years. The menopause occurred four years previously. She was a large, finely developed colored woman who did not appear to be more than 45 years of age. She came into my service at the City Hospital, Oct. 15, 1902. She complained of pain in the hypogastric and inguinal regions and had a vaginal discharge. She confessed she thought she had gonorrhea, which had been contracted six weeks previously.

Examination.—There was slight fever, marked pain and systemic disturbance enough to confine the patient to the bed. A vaginal examination showed only slight vaginitis, but marked endometritis, a fixed uterus and induration surrounding the uterus. Dr. W. S. Dodds made a bacteriologic examination of the vaginal and uterine secretions, demonstrating the presence of gonococci, streptococci and staphylococci.

Diagnosis.—Here, then, was a case of acute pelvic inflammation, due to gonorrheal and mixed infection, the infective material finding lodgment in the uterus, and there exciting an inflammation that extended to other pelvic tissues. Two weeks after her admission an examination showed a marked improvement in the pelvic peritonitis, and the prolapsed, inflamed and agglutinated tubes and ovaries could be palpated. A few days later it became apparent that pus had formed and was accumulating in the tubes or ovaries. The patient declined to allow us to operate by abdominal section, but finally consented to permit us to aspirate the abscess in the right tube or ovary with a hypodermic syringe. By this means we drew from the abscess several drops of pus, thus demonstrating the statement I have made in a former paper,[1] that in acute senile endometritis is "there is a tendency of the inflammation to spread to the uterine appendages and the pelvic peritoneum, resulting in some instances in pus accumulations within the tubes and ovaries or leading to pelvic adhesion."

1. THE JOURNAL A. M. A., Nov. 3, 1900.

In the beginning of acute senile endometritis there is marked intensity of symptoms. The chronic form of senile endometritis may be a prolongation of a former endometritis; in other words, it may be a continuation of an endometritis existing before the menopause. An endometritis resulting from gonorrheal infection and progressing until the tubes and ovaries must be extirpated in consequence of purulent disease, is very prone to persist after the salpingo-oöphorectomy, even though the uterus be most thoroughly curetted.

When the inflammation so persists it is most distressing and retards convalescence. So distressing and persistent is this post-operative endometritis that I have gradually come to the belief that where the endometritis is pronounced and has existed long previous to the operation, it is the better practice to remove the uterus also, when necessary to extirpate the appendages. Unquestionably, chronic senile endometritis in the majority of instances is preceded by acute endometritis when it is not a sequel of an anteclimacteric endometritis.

Retroversion of the uterus and suppurating fibroid tumors are recognized as predisposing causes of senile endometritis. Prolapsus of the uterus, because of the congestion of the uterus dependent on it, and because of the exposed condition of the cervix and os, must be considered another cause. So may be laceration of the cervix uteri also. In the latter case not infrequently the diseased condition of the mucous membrane and deeper structures of the cervix furnish a suitable field for the rapid development of microbic action. Because of the lowered resisting power of the tissues, together with the proneness of these senile tissues to degenerative changes, there is no strong barrier against inflammatory changes, due to the activity of the pathogenic bacteria. A patulous os and cervical canal may in some instances afford ready entrance to infectious material introduced into the vagina. The sources and nature of the infections in senile endometritis are those common to inflammatory diseases of this region. Gonorrhea is not so frequent after the menopause, yet when it does occur it often runs a virulent course, involving an inflammation of varying degrees of intensity, the vagina, uterus and bladder, and not seldom the rectum also. The history of the following case illustrates a frequent course in such cases:

CASE 2.—Mrs. B., aged 52 years, passed the climacteric twelve years previously. She consulted me Feb. 19, 1898, giving the following history: She is the mother of six children, and has always enjoyed good health until two years ago, when she became ill, complaining of frequent and painful micturition, vaginal discharge and an inflamed and eroded vulva.

Examination.—At the time of my examination there was but little swelling of the vulva, but an intense vaginitis and marked endometritis. The patient complained of very distressing smarting, burning and itching of the external genitals. A few weeks' treatment of topical applications of solution of nitrate of silver and astringent douches brought marked relief, so that the vaginitis seemed very nearly well, but the endometritis persisted. In this case the discharges were purulent and offensive. A bacteriologic examination showed the presence of gonococci in the discharge. There were occasional small uterine hemorrhages.

Operation.—March 10, 1898. A thorough curettement of the uterus was done with a sharp curette and the cavity packed with iodoform gauze. Two days later the packing was removed and the uterine cavity was irrigated with an antiseptic solution. The os and cervical canal were patulous, the uterine cavity dilated, and the walls of the uterus very elastic, so that we felt the necessity of caution in curetting, lest the uterine wall be punctured or torn.

After History.—For a few weeks after the curettage the pa-

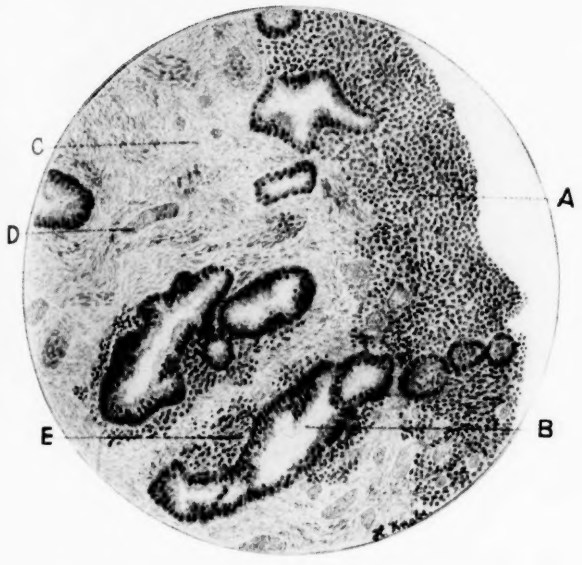

Fig. 2.—A. Cervical epithelium. B. Cystic glands. C. Muscularis. D. Congested vessel. E. Round-celled infiltration. Bausch & Lomb 1/6 obj.

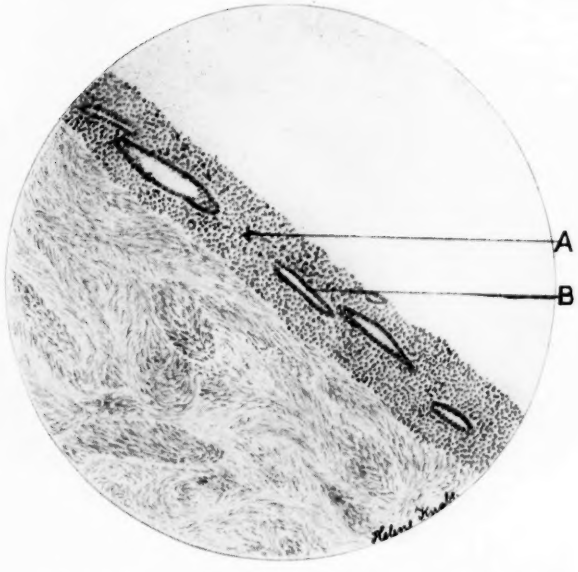

Fig. 3.—Endometrium. Area showing a thin atrophic mucosa, gland tubules few and lying parallel to surface. No inflammatory infiltration. Surface epithelium entirely gone. A. Mucosa. B. Gland.

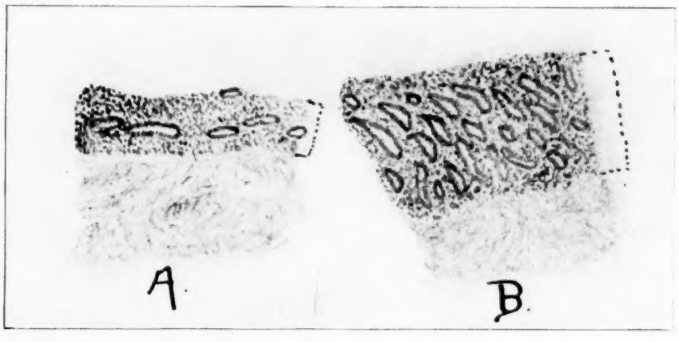

Fig. 6.—Outline sketch to show relative thickness of thin areas and thicker areas with inflammatory infiltration. Bausch & Lomb 2/3 obj.

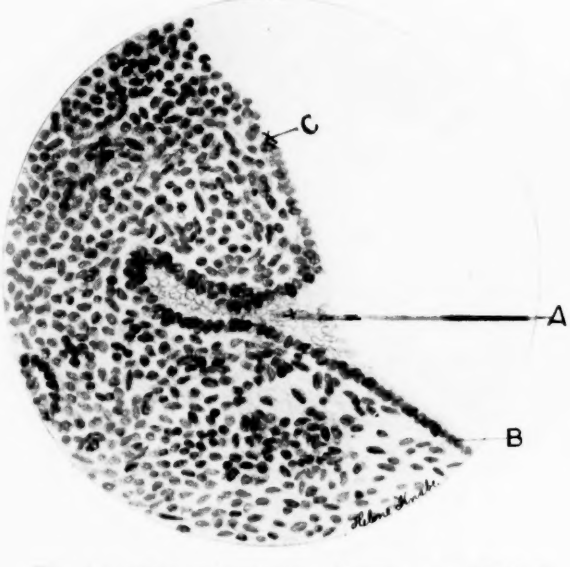

Fig. 4.—Senile endometritis. Mucosa. A. Mouth of gland. B. Surface epithelium, shows flattened condition, cells are cuboidal or even squamous. Epithelial layer is not continuous; only a few such islands as shown here can be found; limit of this "island" is seen at C. Bausch & Lomb 1/6 obj.

Fig. 5.—Cross section body wall of senile uterus. A. Normal muscle tissue. B. Area of mucoid degeneration, involving both connective and muscle tissue. C. Band of muscle tissue undergoing degeneration. Bausch & Lomb 2/3 obj.

Fig. 1.—Case 3. Senile endometritis. A. Denuded epithelium. B. Gland. C. Gland containing blood. D. Effused blood in endometrium. E. Muscularis. F. Vessel (arteriosclerosis). G. Round-celled infiltration. Bausch & Lomb. Ob. 2/3.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.—Illustration of article by Dr. L. H. Dunning.

tient was markedly better, but then the discharge gradually increased, became offensive and irritating, and slight hemorrhage appeared. The patient declined to have anything further done for two years, when the suffering became intolerable, and I was asked to do another curettage. I advised a hysterectomy, but it was rejected; so, Jan. 6, 1900, another thorough curettage was done. As in the former instance, this brought relief for a time, when again the discharge became profuse, offensive in odor and irritating to all the tissues it touched. In January, 1904, the husband of the patient consulted me about his wife's case. He said she was well nourished and able to attend to her household duties, but that she had the same old foul, irritating discharge, and occasional hemorrhages. I urged the advisability of a hysterectomy, but this the patient declined, and I lost sight of the case.

Case 1 illustrates the further extension of the inflammation into the uterine appendages and pelvic peritoneum. In this instance, however, there was a mixed infection. Investigations have not extended far enough to justify positive statements regarding the relative importance of the different pathogenic bacteria. It is highly probable, however, that the same principles and facts apply in senile endometritis that do in ordinary anteclimacteric endometritis.

SYMPTOMS AND COURSE.

Senile endometritis is not a self-limited disease. It is prone to persist for a long period of time. The acute form after a time gradually merges into the chronic form. The symptoms are alike in both the acute and chronic forms, varying only in intensity.

Some time in the course of chronic senile endometritis there is likely to appear inflammatory changes in the mucous membrane of the vaginal and urinary tracts, and also in the mucous membrane of the rectum. When these complications arise, the patient suffers much distress on account of offensive discharges, frequent and painful micturition, and an uncomfortable fullness and painful feeling about the rectum. Vulvitis is common, and leads to intense itching and marked nervous symptoms. The most prominent symptom due to senile endometritis is the discharge from the uterus. This discharge is purulent, muco-purulent or sanguino-purulent. Ofttimes it is of exceedingly offensive odor, and in not a few cases the hemorrhage is considerable, but the sanguineous discharge is most frequently mixed with purulent material, and more or less of the composite mixture may be retained in the uterus and become exceedingly offensive. In two of my cases I was entirely unable at first to understand why so much of this material accumulated within the uterus. The os was patulous in both cases. On examination the uterus was found to be slightly retroverted. The walls of the uterus were thin and elastic, and a histologic examination showed the muscular walls to be weakened by degenerative processes. In these instances we had a full explanation of the cause of the retention, in the retroversion and in the diminished contractile power of the uterus.

Dr. Ferguson suggests that in cases such as he and Dr. Ritter examined, inasmuch as the discharge found in the uterus on opening it after the operation was slight and inoffensive, that it is probable that the uterine discharges were arrested in the folds of the vaginal mucous membrane and there came in contact with bacteria which induced decomposition and gave rise to the offensive odor so pronounced on vaginal examination.

Occasionally the internal os is closed. This, however, in my experience is not frequent, and in this my observations are at variance with those of some writers. In the few cases in which I have found retained pus, blood and débris in the uterine cavity the odor of these fluids has been exceedingly offensive.

Usually the cervical canal is easily dilatable, so that a large-sized sound may be passed with ease. The purulent discharge is usually creamy in consistency, sometimes of an offensive odor, and more or less irritating to the external genital organs.

Pain is a persistent symptom. The pain is burning in character. Occasionally the patient may describe the pain as a sore pain, and in rare instances the soreness of the pelvic organs is the chief cause of complaint. Many patients complain of backache and languor, and not a few of them are cachectic, the cachexia being due to a mild form of sepsis. In the acute cases there are also systemic disturbances, such as a low grade of fever and general malaise. Ofttimes the symptoms produced by the incidental or complicating lesions will overshadow the symptoms produced by the endometritis. This is true especially if there be vulvitis attended by soreness, pain, itching and extreme nervousness, or if there be kraurosis of the vulva and a caruncle of the urethra. Probably cystitis is the most distressing complication.

In a former article[1] I gave the results of a microscopic examination of a uterus in which the lesion was acute senile endometritis. To-day I present the histologic findings in two cases of chronic endometritis. The first case is as follows:

CASE 3.—Mrs. C., aged 63 years, was referred to me Jan. 27, 1904, by Dr. Peacock of Ladoga, Ind. The patient passed the menopause twenty-three years ago. She states that her health was good until four or five years ago, when she had an attack which was pronounced gallstone colic. She recovered from this, when she began to have falling of the womb. The latter disease was gradually increased until it had become a great source of discomfort to her, and has been aggravated because of the necessity of her being compelled to lift and care for a helpless husband. She says that for about a year she has had a creamy discharge from the genitals. Last August, five months ago, she had the first bloody discharge. Since that time she has had a bloody discharge almost continuously. This discharge was at times quite profuse. She states that there is at times a watery discharge, the odor of which is very offensive.

Examination.—The uterus was prolapsed to the second degree, the vaginal walls partially prolapsed, thickened and reddened. The external os showed some slight redness, with two or three small areas of papillary enlargement. These bleed readily on touch. There did not seem to be any localized area of inflammation or irritation of the vaginal walls. The prolapsed portion of the vaginal walls showed the usual thickening and roughening, due to prolapsus, and irritation due to the friction of the patient's clothing. The depth of the uterus was 2½ inches. Quite a little sanguino-purulent discharge passed from the uterus on examination. It had an offensive odor.

Diagnosis.—I made a diagnosis of senile endometritis and prolapsus of the uterus, and decided to extirpate the uterus because of the prolapsus, which had not been relieved, notwithstanding a prolonged and persistent effort by her regular physician.

Operation.—The patient was sent to St. Vincent's Hospital and was operated on Feb. 3, 1904, in the presence of the medical students, internes, and with the assistance of Drs. J. Q. Davis and C. E. Ferguson. A hysterectomy was done by the Clamp method. The uterus and appendages were handed over to Dr. Ferguson for bacteriologic and histologic examination. His report is herewith appended, together with drawings (Figs. 1 and 2, Case 3) from microscopic sections.

Dr. Ferguson reports on this case as follows:

Pathologic Report.—"The length of the uterus is 3 inches, a little more than one half of which is cervix. The depth of the

canal is 2½ inches and patulous throughout its course. The anterior and posterior walls of the body are each ¾ of an inch in thickness and very firm and resistant to the knife. A cyst the size of a pea is seen on the cervical mucosa at the internal os. The anterior and posterior lips are much thickened. The endometrium from the internal os to the fundus is ecchymotic and closely studded with minute elevations.

Microscopic Report.—"Material obtained from a portion of the mucosa by gentle scraping shows an almost entire absence of columnar epithelia, and the presence of a large number of squamous epithelia, and a few red blood cells are found. Sections show the surface epithelium changed or absent. Extensive round-celled infiltration of the mucosa is found, that in many places extends into the muscularis. Glands are numerous, extend into the muscular layer, but are not tortuous as in endometritis glandularis chronica. The mucosa presents numerous cystic spaces, in some instances filled with blood. These spaces are dilated glands, lined by a single layer of columnar epithelium. The capillaries are numerous in some parts of the mucosa, dilated and filled with blood. The mucosa is thickened and infiltrated with blood throughout a greater part of its depth and surface. The blood vessels of the uterine wall show marked arteriosclerosis, the thickened walls in some instances almost entirely closing the lumen. This thickening is confined to the intima.

"The cervix shows marked increase in the glandular elements, numerous cyst adenomata, and congested blood vessels are present. Arteriosclerosis is marked. Round-celled infiltration extends for some distance into the muscular layer.

"Altogether, the microscopic examination gives the picture of a well-marked chronic endometritis in a senile uterus, with a tendency to hemorrhage, the hemorrhage being due to circulatory disturbances, probably dependent on degenerative changes in the walls of the blood vessels and chronic congestion incident to prolapsus of the uterus.

Bacteriologic Report.—"Immediately after the operation the uterus was bisected and cultures made from the endometrium on blood serum, agar agar and gelatin. The result in every instance was negative. A similar bacteriologic examination was made in Case 4, with a negative result."

CASE 4.—Mrs. D., aged 61 years, consulted me April 4, 1904, on account of prolapsus of the uterus which had existed 1½ years and had been treated by posture, tampons, pessary, etc., without more than temporary relief. She was a well-nourished and active woman. On examination of the heart, lungs and kidneys nothing abnormal was found. She complained of weight and burning pain through the uterus, and stated that she had a thin, creamy discharge from the uterus, which was irritating and at times of offensive odor. She passed the menopause eleven years ago, and was not aware of the presence of any uterine disease or displacement until 1½ years ago. The displacement of the uterus preceded the appearance of the discharge several months. Two weeks ago she had, for the first time in eleven years, a sanguineous flow from the uterus lasting four days and as abundant as an ordinary menstruation.

Examination.—I found the uterus protruding from the vagina. There was also prolapsus of the vagina, and the os was larger than normal, but not eroded. The uterine sound passed readily into the cervical and uterine canals 2¾ inches.

Operation.—She was sent to the Deaconess Hospital and operated on April 6, 1904. The external os was closed by sutures, and the uterus extirpated by the clamp method.

Pathologic Report.—An examination of the uterus after removal showed the organ rather larger than the normal senile uterus. There was supravaginal elongation of the cervix. The cervical canal was patulous and the uterine cavity easily distensible. There was no evidence on macroscopic examination of hemorrhage beneath the mucous membrane or into the muscularis.

The specimen was given to Dr. R. H. Ritter for critical examination. Dr. Ritter's report was as follows:

"The uterine cavity was opened after the surface had been seared by a sterile knife, and the surface of the mucosa gently scraped by the platinum loop. Culture tubes of gelatin, agar and blood-serum were inoculated.

"The uterine cavity is small, the mucosa lining it smooth, even and glistening. The cervical canal is pervious. There is a rather more than normal constriction at the internal os, but the external os is gaping. There are numerous small colored spots, about the size of large pinheads, resembling petechiæ scattered throughout the corporeal mucosa.

Microscopic Report.—"Sections were made from six areas of the mucosa. All present the same picture. The mucous membrane varies greatly in thickness. In some places it is thin and contains very few glands. The glands that remain are small, usually with a very narrow lumina, and lie more or less parallel with the surface. There is no inflammatory infiltration. These areas, then, exhibit the normal atrophic changes of senility.

"In other regions the endometrium is of normal or perhaps slightly increased thickness, the glands are numerous but irregular and tortuous, many having dilated lumina. The stroma of the mucosa in such places is quite dense, especially around the glands. There is an irregular round-celled infiltration of inflammation in these areas. Throughout the whole endometrial surface the epithelium is almost entirely gone. Only a few patches are seen, most of them lying about the mouths of glands. The epithelial cells are very much flattened and are described as cuboidal, or even squamous, cells.

"There is no evidence of an ulceration of the mucosa, and no loss of substance by necrosis and sloughing to produce the 'thin' areas. There has apparently been a simple epithelial degeneration. I can find no evidence of hemorrhage into the mucosa or into the glands, nor any pathologic changes in the capillaries. The muscularis shows a spread of fibrosis, probably not more, however, than is normal to the senile organ. The blood vessels are markedly thickened, the lumen in many cases being almost obliterated by the thickened intima. Hyaline degeneration has taken place to a marked degree in these vessels. Throughout the larger bands of connective tissue, and involving also bands of muscle fibers, are masses of mucoid tissue, evidently a secondary change to the fibrosis."

There is a marked similarity in the macroscopic and microscopic appearances of these two uteri. The evidences of inflammation are almost identical in both, and this leads me to believe that they may be taken as the type of many cases of chronic senile endometritis, in which an anteclimacteric endometritis is prolonged and continued as a lesion after the menopause.

The characteristic inflammatory lesions present are a thickened mucosa, for the most part divested of epithelium, and showing round-celled infiltration, marked granular activity, the glands in both cases being here and there dilated and in some instances cystic. The inflammatory process showed greater activity in the region of the glands. The glands are lined with columnar epithelium, while the epithelium on the surface of the mucosa is flattened. There is a tortuous course of the glands, and in one case (Fig. 1 C) the lumina of a few of the glands are filled with blood. The round-celled infiltration extends into the muscularis. In this tissue, in Case 4 (Figs. 5 and 6) was found mucoid degeneration of the connective and muscular tissues. In both cases there is marked arteriosclerosis, and in one also hyaline degeneration of the walls of some of the arteries.

In both cases there was considerable hemorrhage. In one case (Fig. 1) there was found effused blood in the endometrium and in some of the glands. In the other case there had been but a single hemorrhage (profuse), yet there was more evidence of degeneration in the walls of the blood vessels than in Case 3. It is probable that had not the uterus been removed, subsequent hemorrhage would have occurred.

DIAGNOSIS.

The diagnosis is made by the symptoms above enumerated and by the physical signs. The pain and soreness in uncomplicated cases are distinctly referred to the uterus. As a rule, the upper portion of the vagina is inelastic and the uterus difficult of palpation. The vaginal portion of the cervix may be almost entirely obliterated, but the patulous external os can usually be felt. In such cases it is common to find the vaginal mucous membrane surrounding the os more or less eroded in small areas, and the whole circumference of the upper portion of the vagina infiltrated and inelastic. If now in this field is seen the opening of the patulous os, from which exudes a mucopurulent or sanguinopurulent discharge, we have in all probabilities to deal with a case of senile endometritis, and if, further, a sound passes readily into the uterus, and by it it is determined that there is an absence of any neoplasm, and there is the presence of a smooth mucous surface lining a dilated cavity of the uterus, the diagnosis of senile endometritis may be confidently made.

In other cases, especially if there be prolapsus of the uterus or laceration of the cervix, the cervix may be unusually large for a post-climacteric uterus. Cystic degeneration of the cervix may be observed or an angry erosion which bleeds readily on the slightest touch. Occasionally there will be found slight papillary elevations projecting from the eroded surface. This latter appearance closely resembles that seen in incipient squamous-celled epithelioma of the cervix, and a differential diagnosis can be positively made only by a histologic study of portions of the diseased tissues removed for examination. Another source of difficulty in diagnosis is an occasional presence of an adenoma of the cervix. In these cases the sanguineous flow is more abundant and the discharge less purulent. Here also a histologic study of portions of the diseased areas must be made to confirm the diagnosis.

The same remarks hold true regarding the diagnosis in doubtful cases in which there is a sanguineous discharge from the interior of the uterus. Here it is wise to thoroughly curette the uterus and make search for evidences of malignancy in the scrapings. In all the cases of suspected senile endometritis in which I have explored the interior of the uterus with a dull curette, and there has been an absence of anything resembling a neoplasm, the case has proved to be non-malignant. In the case of a sloughing submucous fibroid tumor the difficulties of diagnosis with microscopic examination are insurmountable. In severe persistent cases I think it important to determine the character of the infection, as those due to mixed infection will likely require energetic treatment, while cases dependent on gonorrheal infection will often demand hysterectomy. When the internal os is closed the uterus will be found distended, so that if a probe be carried through the obstruction and the opening thus made dilated, there will be an escape of a considerable quantity of purulent or sanguinopurulent bad smelling discharge.

TREATMENT OF SENILE ENDOMETRITIS.

At the beginning of acute cases it is all important that good drainage be established and the complications duly treated. Should there be stenosis of the os it should be overcome by gentle yet thorough dilatation. The steel dilator may be used, but the tissues of the cervix are so inelastic that forcible dilatation must be employed with gentleness lest the tissues be lacerated. The slippery-elm tent when it can be passed through the internal os is quite efficient. In the acute cases I do not believe the curette should be employed until the intensity of the symptoms has passed. I have on several occasions after dilating and washing out the cavity, made applications to the interior of the uterus of pure carbolic acid, and followed this in one to one and one-half minutes with an injection into the cavity of commercial alcohol. No outward symptoms have followed this procedure, and very marked relief of the soreness and discharge has resulted. This is, I believe, appropriate treatment for both the acute and chronic cases. Such applications for a few times may be repeated once a week if well borne. When the acute symptoms have passed, dilatation, curettage and packing with iodoform gauze have been beneficial and not infrequently curative. The advantages gained by the curettage should be followed up by maintaining a patulous condition of the os, and by making applications to the endometrium of solutions of nitrate of silver in strengths of 5 to 10 grains per ounce.

Reference to Figure 6, Case 4, together with Dr. Ritter's description of the microscopic findings in this case, will, I think, afford an explanation of the fact that not infrequently a curettage fails to effect the cure of endometritis. In this case the inflamed portions of the mucosa were found in islands or patches, while other portions of the mucosa were normal. If a curettage is not sufficiently thorough to remove the mucosa in every part of the uterine cavity and cervical canal, that part untouched by the curette or only partially removed, if inflamed, may remain as a focus, from which will spread the lesion after regeneration of the endometrium.

If senile vaginitis and vulvitis exist with the endometritis, these conditions should be, if possible, cured before the curettage.

To this end, two or three times a week the vulva and vagina may be painted with a solution of silver nitrate. This, with the applications twice a day of Lassar's paste to the inflamed tissues and the use of astringent and antiseptic douches, usually bring relief.

In those cases dependent on the presence of a necrotic fibroid tumor, the remnants of the neoplasms should be removed by the curette or other means. The writer has met with little success in overcoming retroversion of the senile uterus. If this displacement is the cause of the endometritis, and the ordinary means of cure fail in the grave cases, recourse may be had to hysterectomy.

During the progress of the local treatment attention should be given to the general health of the patient. Tonics, alteratives and laxatives may be employed according to the requirements of the case.[2] Skene places much reliance on the local effects of iodoform applied as a powder to the endometrium.

The tendency toward recovery in senile endometritis is not marked; indeed, the disease is prone to persist in spite of all treatment. When it does persist and contributes largely toward the production of the ill health of the patient, vaginal hysterectomy may be resorted to if the patient's condition demands and will justify such a procedure.

In all, I have extirpated the uterus in cases of senile endometritis six times—five times by the vaginal route and once by the supravaginal route. In two cases the endometritis was associated with procidentia, which furnished the chief indication for hysterectomy; in one case there was chronic sepsis, due to absorption from the uterus; in one case the appendages had been extir-

2. Medical Gynecology, p. 500.

pated because of gonorrheal salpingitis and the endometritis was distressing and incurable, the patient being an invalid. In the remaining case the uterus was extirpated under a mistaken diagnosis, as I believed I was dealing with a case of cervical cancer. These were aggravated cases of senile endometritis with grave complications, and the results of the hysterectomy were most gratifying.

In those cases in which there is atresia of the os and a resultant pyometra, great care must be exercised in effecting an entrance into the uterine cavity and in maintaining a patulous os. A medium-sized, blunt-pointed probe may be gently insinuated into the os, pushed into the cavity, and this followed by one of larger size, and a still larger one until an opening of sufficient caliber has been made to admit the passage of an elm tent. The dilatation of the os should be ample. After a few days of draining of the cavity, curettage or the treatment of the interior of the uterine cavity with the carbolic acid and alcohol may be resorted to.

When suppuration of the fallopian tubes or ovaries appear in the acute cases, hysterectomy and salpingo-oöphorectomy is, in my judgment, the proper procedure.

Original Articles.

ARTERIOSCLEROSIS DUE TO LEAD.*

FRANK S. BILLINGS, M.D.
CHICAGO.

The subject assigned to me in the symposium was "Arteriosclerosis Due to Metallic Poisons."

I have had no experience with the effects of other metals, and, therefore, confine my remarks to the toxic influence of lead.

MODE OF ENTRANCE TO THE SYSTEM.

Lead and its compounds are so commonly used by man that it is not surprising to meet with its toxic effects in the body. This occurs more frequently because with some individuals it gains easy access to the body.

Not only may it be taken into the body as a contamination of food and drink and doubtless from prolonged medicinal use, but it may also be taken into the alimentary tract from the hands soiled with metallic lead or from lead paints. Doubtless it may be absorbed through the skin, as frequent cases of poisoning have occurred from the use of lead hair dyes.

Cigarmakers sometime roll cigars on tinned plates which contain lead, and susceptible individuals are poisoned. Diamond cutters who imbed gems in an amalgam of lead, which can be molded in the fingers and facilitate the cutting of the stones, may suffer from lead poisoning.

There can be no question that some individuals are very susceptible to lead.

There is now in the Cook County Hospital, Chicago, a man who is suffering from lead intoxication, who came in contact with the metal in the following way: Once a week, in his bare arms, he carried the bars of lead solder, used to seal the locks of freight cars, to the several cars of a train. This brought his skin in contact with lead for a few minutes only once a week.

Within the last few weeks I have also seen a woman who showed a typical blue line on the gums, granular degeneration of the red blood cells, and complained of marked colic and constipation.

She washed the paint-smeared clothes of her husband, a house painter. I could not learn that she came in contact with lead in any other manner.

BLOOD CHANGES IN LEAD POISONING.

When lead intoxication produces the typical blue line on the gums, the intestinal colic and constipation, the anemia, the palsies and encephalopathy, we recognize it readily.

There can be no question that it also produces latent toxic effects which are not as easily recognized.

The interesting observations of Moritz,[1] White and Wilcox,[2] Grawitz,[3] Homel,[4] Schur and Löwe,[5] Rosin and Bibergeil,[6] Reitter[7] and others, of the presence of red blood cells showing granulations in persons suffering with lead poisoning are important.

With few exceptions, all observers agree to the constancy of the granulation of the cells of the blood in lead poisoning. Many workers in lead, who present no other symptoms, show this blood change.

The blood of animals fed on lead early exhibits the granules in the blood cells. Most observers look on the granules as of protoplasmic origin and degenerative in character. The granules disappear from the blood when the cause is removed.

Some individuals are more susceptible to this so-called basophilic granulation than others, and workers in lead whose place of occupation is less sunny and poorly ventilated suffer more than those in better hygienic surroundings. Basophilic granulation is by most observers considered of value in diagnosis, and the disappearance of the granules is a good prognostic sign.

EFFECT OF LEAD ON OTHER TISSUES.

There is abundant experimental and postmortem evidence that lead may attack practically all the tissues of the body.

Annino[8] fed lead to dogs, rabbits, rats and mice, and found that animals even of the same litter differ much in resistance. Lead soon appeared in the urine. Lead was also found in the fetus, which explains the tendency of women who suffer from lead poisoning to abort.

In the different tissues it was noted that the lead produced varied effects.

In protoplasm, cloudy swelling, fatty degeneration; vacuolization and granular atrophy and hyaline degeneration of the nuclei.

In the later stages, connective tissue hyperplasia. There was a decided tendency to hemorrhage and endarteritis, even to obliteration. He observed fatty degeneration of the muscularis and of the capillary endothelium.

Coene and D'Ajutolo[9] found that lead had first, a destructive action on parenchymatous tissues; second, on the blood and blood vessels; and, finally, a sclerosing action. This effect, they claimed, applied to all organs, but was most pronounced in the kidney.

Oeller,[10] in an article entitled "Ueber hyaline Gefässdegeneration als Ursache einer Amblyopia Sa-

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NOTE.—The other articles in this symposium, by Drs. Thayer and Brush, Drennen and Dock, were published in THE JOURNAL September 10.

1. Deutsche med. Woch., 1901, vol. xxvii, No. 5, p. 5.
2. Amer. Jour. Med. Sciences, 1901, vol. cxxii, p. 266.
3. Deutsche med. Woch., 1899, No. 36.
4. Deutsch. Arch. of klin. Med., 1900, vol. lxvii, p. 357.
5. Zeitschrift f. klin. Med., 1900, vol. xl.
6. Deutsche med. Woch., 1902, Jan. 16-23.
7. Wiener klin. Woch., 1902, Nov. 20.
8. Ann. di. Chim. e di. Farmacol. 1894, vol. xx, No. 1, p. 59.
9. Ziegler's Beiträge, 1898, vol. iii, p. 449.
10. Virch. Arch., 1881, vol. lxxxvi, p. 329.

turnmia," found in the vessels of the eye endarteritis, hyaline degeneration, thrombosis and hemorrhage. He argued that similar changes occurred in the vessels of other organs, notably the kidney, in lead poisoning.

Stieglitz[11] found similar changes in the blood vessels, but most marked in the pulmonary circuit. Mairer found the larger arteries unchanged, but very characteristic lesions in the smaller vessels He described aneurismal dilatations chiefly in the vessels of the intestinal tract, and other observers have found the same changes in the vessels of the kidneys, the muscles, the nervous system, the liver, etc. Other observers confirm the findings of Stieglitz in reference to the involvement of the pulmonary vessels. The changes consisted of endarteritis, fibrous thickening of the intima, hyperplasia of the periarterial connective tissue, excess of nuclei and thickening of the media. The heart muscles showed fatty degeneration.

Charcot and Gombault[12] produced changes in the kidneys of animals very similar to the chronic interstitial nephritis associated with lead poisoning in man.

Coen and D'Ajutolo,[9] in their experiments on rabbits, found that lead produced in the kidney parenchymatous degeneration, glomerulitis, with hyaline degeneration of the blood vessels and finally interstitial nephritis. In the stomach, proliferation and degeneration of the cells of the glands, localized inflammatory changes in the arteries with endarteritis and perivasculitis in the submucosa. Similar changes in the vessels of the intestine, liver and muscles. The general sequence of changes noted by them were parenchymatous degeneration, blood-vessel changes, interstitial hyperplasias.

Prevost and Binet[13] made extensive experiments of the effects of lead on rats, rabbits and guinea-pigs. Nephritis could always be demonstrated microscopically.

The experimental evidence of the toxic effect of lead on the various tissues of the body is supported by numerous postmortem records.

Dickinson[14] reports that of 42 workmen having labor which exposed them to lead poisoning, dying from disease or accident in St. George's Hospital, 26 had granular degeneration of the kidneys, with the usual cardio-vascular changes. Again, of 45 men dying of granular degeneration of the kidneys, 10 were lead workers.

Leyden[15] relates a case with severe and widespread symptoms of lead poisoning.

The autopsy showed the typical granular kidney. The glomeruli were shrunken and fibrous; the afferent and efferent vessels and the tufts showed hyaline degeneration; moderate hypertrophy of the intima in some of the large vessels. The left heart hypertrophy and a full, sustained, radial pulse during life. Three other similar cases were reported with like findings.

Leyden calls attention to the fact that there is practically no general arteriosclerosis in these cases of nephritis due to lead poisoning. The arteries of the kidney are thickened by hypertrophy of the muscular coat.

Kussmaul and Maier[16] give the pathologic anatomy of chronic saturnismus This case they studied during life and postmortem Clinically, there was a typical chronic plumbism, with nervous symptoms, colic, etc.

Histologically, the connective tissue of the submucosa of the intestinal tract showed hyperplasia. The walls of the vessels were decidedly thickened, especially the adventitia of the arterial twigs, with narrowing of the lumen. There was a marked tendency to fatty degeneration of the muscular and glandular elements with decided atrophy. There was a slight and definite increase of the connective tissue surrounding the blood vessels of the spinal cord, brain and the sympathetic ganglia.

Von Schrotter[17] quotes a personal communication of Kolisko, who has made extensive observations of the arteries under the influence of lead. Kolisko says that the vessel changes consist chiefly of hypertrophy of the media. Preceding degenerative changes, as are usual in sclerosis, were not observed, and the intima is only occasionally the seat of hyperplasia.

Senator,[18] in the discussion of the relation of lead to chronic interstitial nephritis and the associated cardio-vascular changes, gives Lancereaux[19] the credit of first recognizing the importance of lead as a causative factor in nephritis. Ollivier[20] also recognized the importance of lead as a cause of nephritis. Senator also cites the experiments and conclusions, already quoted of Charcot and Gombault, Coen and D'Ajutolo; and the clinical and postmortem observations of Dickinson. In addition, he quotes Jacob,[21] who found 12 cases of granular kidney, of whom 8 were lead workers. Wagner[22] found lead as the cause fifteen times in 150 cases Senator was able to verify lead as a cause of the nephritis in 10 of 180 cases, and in 6 of these cases the clinical data were verified by autopsy.

Thomas Oliver[27] discusses lead intoxication, and believes the sclerotic changes of the kidney are secondary to an original degeneration of the epithelium of the tubules. The glomeruli finally become involved in the degenerative changes, and sclerosis ultimately occurs.

Gombault[24] says that lead poisoning, like alcohol, syphilis and gout, has an injurious effect on vessel wall nutrition, hence predisposes to degeneration and sclerosis.

Ebstein[26] discusses the relation of lead to gout. In 1,103 cases of lead poisoning, gout occurred in 103. He cites other observers giving the same result. In individuals predisposed to gout, even small doses of lead may cause an attack of gout.

He believes that an hereditary predisposition to gout must exist in order that lead may cause gouty symptoms.

Oliver[26] says that on experimental and pathologic grounds lead has a direct harmful influence on the kidney. The first changes are parenchymatous, the second interstitial, that is, cloudy swelling and fatty degeneration in the convoluted tubules. At the same time there occurs cellular proliferation in the labyrinth, about the afferent glomerular vessels, on the inner Bowman's capsule, and between the tubules. Then develops a true interstitial nephritis, with thickening of the walls of the vessels, described by Oliver as a mixed nephritis.

Von Jacksch[27] says that in lead intoxication there are always serious changes in the nitrogenous metabolism

11. Arch. f. Psychiatrie, vol. xxiv.
12. Arch. de Physiologie, 1881, 2d series, vol. viii, p. 126.
13. Rev. Med. de la Suisse, 1889, Nos. 10-11.
14. Dis. of the Kidney, part 2, p. 382.
15. Deutsche med. Woch., 1883, vol. ix, p. 185.
16. Deutsch. Arch. f. klin. Med., 1872, vol. ix, No. 5, p. 283.
17. Erkrankungen der Gefässe, Nothnagel's Sp. Path. u. Therap., 1901, vol. xv, No. 2, p. 82.
18. Nothnagel's Sp. Path. u. Therap., 1896, vol. xix, p. 244.
19. Union Med., 1863, p. 513.
20. Arch. Gen. de Med., 1863, vol. ii, p. 530.
21. Deutsche med. Woch., 1886, p. 547.
22. Ziemssen's Encyclopedia.
23. Allbutt's System of Medicine, vol. iii, p. 983.
24. Arch. d. Phys., vol. v, p. 153.
25. Virchow's Arch., vol. cxxxiv, p. 541.
26. Lead Poisoning in Its Acute and Chronic Forms, Edinburgh and London, 1891.
27. Nothnagel's Spec. Path. and Therap., 1897, vol. i, p. 207.

of the body, resulting in an increased production of uric acid. According to the newer theories of uric-acid formation, it must be supposed that under the influence of lead, there results an excessive destruction of nuclein containing substances. This toxic influence is, according to von Jacksch, a decreased oxidation.

CONCLUSIONS.

From the above opinions of the effect of lead on the blood vessels and on those organs which, when diseased, have an associated or resultant thickening of the walls of the vessels, we may conclude that lead may produce a disease of the blood vessels either directly or indirectly.

Directly, as shown by the numerous experiments on animals. Probably this is by the direct influence on the vessel of the lead in the circulating blood. Doubtless the walls of some of the larger arteries may be affected through the alteration in the nutrition, because of the primary toxic endarteritis, with the tendency to thrombosis and obliteration of the vasa vasora.

The undisputed fact that lead may cause gout, and the equally true proposition that in gouty individuals arteriosclerosis occurs early, may explain the influence of lead in producing arteriosclerosis in rare cases.

Experimental and clinical observations prove incontestably that lead will cause nephritis. This is usually the contracted kidney, which sooner or later has associated with it the thickened arteries and left cardiac hypertrophy.

Lead intoxication may lead directly and indirectly to arteriosclerosis.

The recognition of lead intoxication during life, by any of the ordinary symptoms or by the basophilic granulations of the cells of the blood, in an individual suffering with arteriosclerosis, with or without nephritis, would not, perhaps, permit us to say definitely that the lead was the sole causative disease factor. It would, however, be a rational therapeutic measure to safeguard the individual against further intoxication with lead in the treatment of the arteriosclerosis.

100 State Street.

THE RELATION OF ALCOHOL TO ARTERIOSCLEROSIS.*

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LITERATURE.

Most standard text-books[1] assert unconditionally the importance of the excessive use of alcoholic liquors in the production of arteriosclerosis. Standard treatises on the heart and blood vessels[2] are equally emphatic. In Nothnagel's magnificent "Specielle Pathologie und Therapie," Schrötter says, after reviewing the literature: "Alcohol is considered by practically all writers on arteriosclerosis as the chief cause or at least one of the most important causes of the condition." Yet Schrötter himself seems to be somewhat dubious regarding the evidence on which the belief is founded, and there are others, such as Duclos[3] and Ribberts,[4] who are yet more outspoken in their skepticism.

CLINICAL RESEARCH.

1. I investigated first the question:

How many cases of arteriosclerosis not referable to syphilis or to advancing age are to be found among alcoholics?

At the Bridgewater State Farm and the Foxboro Asylum for Dipsomaniacs, I investigated 283 cases of the severest and most chronic forms of alcoholism, excluding those over 50 years of age and those who have had syphilis. A quart of whiskey daily for many years was a not infrequent history in these cases.[5]

Of the total 283 cases, only 18, or 6 per cent., showed arteriosclerosis, so far as could be ascertained by examination of the heart and peripheral vessels, and by questions regarding the functions of the kidney.[6] If the cases over 40 years be excluded also, the percentage showing arteriosclerosis falls to 1.4 per cent.

2. I next endeavored to determine in what proportion of cases of relatively early arteriosclerosis of the peripheral arteries alcoholism was present.

Out of the several hundred cases of arteriosclerosis seen by me at the Massachusetts General Hospital, 45 were under 50 years of age. Only 6 of these, or 13 per cent., gave any history of alcoholism.

POSTMORTEM EVIDENCE.

3. By the kindness of Dr. J. H. Wright of the Massachusetts General Hospital clinicopathological laboratory, and of Dr. F. B. Mallory, pathologist to the Boston City Hospital, I was enabled to examine the records of 656 patients, 95 of whom were under 50 years of age and with no history of syphilis, in which arteriosclerosis formed a part of the pathologic diagnosis at the autopsy. On looking up the clinical records of these 95 cases, it was found that in 57 cases, or 60 per cent., it is expressly stated that the patient took no alcohol. Regarding the remaining 39 cases, in the table given below, I have quoted the actual words of the record. It will be seen that in 8 cases excessive alcoholism is expressly stated to have been present. In 14 cases it is stated or implied that the amount of alcohol consumed was moderate, while in 5 cases the statement may be interpreted as an insignificant amount of alcohol. Subtracting these 19 cases we have left 20, or 21 per cent., in which the consumption of alcohol was excessive.

It will be seen from the table that 8 of the cases among those who took more or less alcohol, were found at the autopsy to have chronic nephritis as well as arteriosclerosis, so that if, as is usually believed, chronic nephritis is a cause of arteriosclerosis, these cases should be subtracted from those which might be supposed to be due to alcoholic excess. This would remove 4 of the cases in whose clinical record excessive alcoholism played a feature.

It should also be borne in mind that as most of these cases were taken from the records of the Boston City Hospital, and as that hospital is patronized very largely by those in whose history alcoholism is a feature, the possibility of a coincidence in the occurrence of alcoholism and arteriosclerosis can not be disregarded.

Finally, I will mention briefly the case of a well-known young Bostonian, who deliberately drank himself to death at the age of 36. For the previous ten years

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*Read at the Fifty-fifth Annual Session of the American Medical Association, in the Section on Practice of Medicine, and approved for publication by the Executive Committee: Drs. J. M. Anders, Frank Jones and W. S. Thayer.

1. For example: Osler, Tyson, Strumpell, Wood & Fitz, Loomis-Thompson, and Krehl (in V. Mering).

2. For example: Huchard, Byrom, Bramwell, and Babcock.

3. Duclos: Du Systeme arteriel chez les alcoholiques. Paris, 1888.

4. Ribbert: Pathol. Anatomie, 1902, p. 612.

5. I desire expressly to thank Dr. Charles A. Drew, Medical Director of the Bridgewater State Farm, for his assistance in securing data on these cases.

6. Patients whose arteries were merely palpable without being tortuous, hard or rough were not counted as cases of arteriosclerosis.

of his life he had been in the habit of taking one or two quarts of whiskey a day for about eight months in the year. At the postmortem examination particular attention was paid to the condition of the arteries, and they were found to be entirely normal.

CONCLUSIONS.

1. Only 6 per cent. of 283 cases of chronic and excessive alcoholism under 50 years of age showed any evidence of arteriosclerosis.

2. Of 45 cases of arteriosclerosis examined by me at the Massachusetts General Hospital, only 13 per cent. gave any history of alcoholism.

3. Of 656 autopsy cases of arteriosclerosis, only 95, or 14.5 per cent., were under the age of 50.

4. Out of these 95 cases under 50, in which arteriosclerosis was found postmortem, only 21 per cent., and if we exclude cases complicated by chronic nephritis, only 17 per cent. appear to have consumed alcohol in any notable excess.

The details of the autopsied cases may be seen from the following table:

TABLE OF POSTMORTEM AND CLINICAL RECORDS IN CASES OF ARTERIOSCLEROSIS.

Case.	Age in Years.	Pathologist's Diagnosis.	Previous Diseases and Present Complications.	Amount of Alcohol Consumed.
1	30	Art.	Ch. nephritis.	Five or six whiskies daily for last 15 years.
2	36	Art.		One or two wines daily; never to excess.
3	41	Art.	Phthisis.	Moderate alcohol.
4	24	Sl. art.	Ch. nephritis.	Alcohol moderate.
5	43	Sl. scl. of aorta.		Always hard drinker.
6	37	Art.	Phthisis.	Four or five whiskies and four or five beers daily.
7	21	Sl. scl. of aorta.	Typhoid fever	Alcohol in moderation, but regularly.
8	35	Gen. art.	Ch. nephritis.	Four or five whiskies before breakfast.
9	21	Sl. art.	Typhoid fever.	One whisky every other day.
10	38	Sl. art.	Diphtheria, c h. nephritis.	Four to six beers daily; occasionally whisky.
11	31	Sl. art.		Two or three whiskies and four or five ales daily.
12	32	Art.		"Drinks considerably."
13	43	Sl. art.		Alcohol excessive.
14	30	Art. of aorta		Two glasses of whisky a week and two beers daily.
15	43	Art. aorta		Beer and whisky occasionally.
16	39	Art.	Typhoid fever	Half pint whisky daily.
17	39	Art.	Typhoid fever	Occasionally whisky.
18	40	Art.		Alcohol to excess.
19	44	Art.	Ch. nephritis.	Drank heavily of beer.
21	46	Art. of aorta		Alcohol to excess.
21	34	Art.		Alcohol to excess.
22	46	Art.		Two or three whiskies and two beers daily.
23	46	Art.	Aortic regurg.	Alcohol moderate, but steadily for years.
24	25	Sl. art.		Alcohol in excess.
25	33	Scl. mitral curtain and aortic arch.		Alcohol in great excess.
26	37	Aortic scl.		Alcohol for last 10 years.
27	24	Coronary scl.	Ch. nephritis; scarlet fever.	Three or four beers daily; occasionally whisky.
28	42	Aortic scl.	Ch. nephritis.	Alcohol to excess.
29	43	Gen. art.	Phthisis.	Four or five beers daily.
30	48	Gen. art.	Ch. nephritis.	Alcohol considerable.
31	38	Gen. art.	Fatty deg. heart.	Diag. "alcoholism" (acute). Amt. of alcohol not known.
32	20	Art.	Typhoid fever.	Takes less than one drink a day (beer).
33	44	Gen. art.	Ch. nephritis.	Occasional glass of ale, gin or whisky.
34	29	Gen. art.	Aortic insuf.	Four beers daily.
35	41	Art.		Rum, three glasses week, year around.
36	42	Art.		Two or three bottles of ale a day.
37	39	Art.	Typhoid fever.	Drank lots of beer till year ago—four or five glasses a day—and "a certain amount of whisky."
38	40			No alcohol for last 13 years; before then 14 or 15 whiskies a week.
39	41	Art.	Smallpox	Two or three beers daily; half pint of whisky a week, off and on.

In Cases 40 to 95 the record expressly states that the patient did not use alcohol.

Art.—Arteriosclerosis; ch.—chronic; sl.—slight; gen.—general; scl.—sclerosis; deg.—degeneration.

ANGINA PECTORIS AND ARTERIOSCLEROSIS.*

WILLIAM OSLER, M.D.

BALTIMORE.

In contrast to the many uncertainties relating to angina pectoris is the circumstance that in a large proportion of cases the attack is only an incident in the history of arteriosclerosis. Since Edward Jenner demonstrated postmortem disease of the coronary arteries, the association of a lesion of these vessels with the disease has been accepted as one of the best attested facts in cardiac pathology. Not that it has helped much to explain the mysterious nature of the pain of the attack, or all of the phenomena of the paroxysm. Pain in arteriosclerosis, as we see it in other parts, deserves a more careful study than it has yet received. In the head there is the association of migraine with arterial disease, the severe and characteristic headaches of arteriosclerosis and high pressure, and the agonizing pain in some cases of embolism of the cerebral arteries, more rarely in thrombosis. Abdominal pain is not often due to vascular disease, though there are cases in which, from the situation and intensity of the paroxysm it might rather be called angina abdominis than pectoris. There may be severe pain in lesions of the mesenteric arteries and in thrombosis of the iliac vessels in typhoid fever. It is in sclerosis of the arteries of the extremities that we meet with the most remarkable disturbances of sensation. The pain in embolism or thrombosis of the femoral or popliteal arteries is very intense, particularly at the site of the lesion. In the ordinary sclerosis, particularly of elderly persons, there may be, first, simple paresthesiæ, the numbness and tingling so commonly complained of; secondly, attacks of painful cramps, usually slight and nocturnal, or recurring paroxysms of extraordinary intensity and deserving the name of angina cruris more than intermittent claudication, which Walton has applied to it; thirdly, the pain, not always present, in intermittent claudication; fourthly, the paroxysms of pain with erythema, etc., the arteriosclerotic type of erythromelalgia.

But the pain in angina pectoris is *sui generis*, unlike in intensity any known variety, and while its association with coronary artery sclerosis is unquestionable, there is something additional, some other element for which, as yet, we have no explanation.

In relation to arteriosclerosis, there are four groups of cases of angina pectoris. First, the neurotic, in which in young persons all the symptoms of the disease may be present and death occur, and autopsy shows normal coronary arteries and neither local nor general disease of the arteries. Such cases are not common, but I have reported an instance in a young man of 28, who had had for years paroxysms of cardiac pain of the most agonizing form, who died in an attack.

Secondly, the angina pectoris of young men associated with syphilitic arteritis, aortic or coronary, or both. This is a very distinctive form, occurring usually in men under 35 years of age. There may be no general arteriosclerosis, but the lesion is either at the root of the aorta, or involves the sigmoid valves, or it may be confined to the coronary arteries. The anginal attacks, while severe, are sometimes relieved or even cured by the iodids. The paroxysms of pain may be the initial symptoms of aneurism of the first portion of the arch.

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Thirdy, the presenile cases, forming the great majority, in which the attacks are associated with coronary artery sclerosis as part of a widespread degeneration of the vessels. Hard work, mental more often than bodily, the stress and strain of modern life, excesses in diet and drink, are the factors most concerned, though why in individual cases angina should occur we can not say. There is another element, as yet unknown, since in only a very small proportion of cases of coronary artery sclerosis does angina occur.

Fourthly, the senile group. After 70 angina is a not infrequent manifestation, a sort of terminal event in the cardiovascular degeneration. Death often results from an attack, or there may be a series of paroxysms preceding a final breakdown.

THE TREATMENT OF ARTERIOSCLEROSIS.*

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PHILADELPHIA.

To develop the subject of the treatment of arteriosclerosis in its principal bearings, it will be necessary first to subdivide the cases into etiologic categories, as follows: 1. Those due to toxic agencies in the blood, e. g., in chronic alcoholism, lead poisoning, diabetes mellitus, syphilis, gout, rheumatism and other infectious diseases. 2. Arteriosclerosis caused by the constant ingestion of an excess of either the carbohydrates or nitrogenous foods. 3. Cases dependent on constant hypertension, due to muscular overexercise, as in certain laborious occupations and violent competitive sports. 4. Aortic regurgitation, in which overfilling of the blood vessels is a concomitant; also exalted tension arising from ingestion of an excess of fluids, as in beer drinkers. 5. Cases due to senile degenerative changes.

With the two last-mentioned groups of cases I shall not deal at present writing, although many of the measures that will be recommended for arteriosclerosis originating in other ways tend to retard senile degeneration.

PROPHYLAXIS.

Prophylaxis should begin in early life, restraining enthusiasm, energy and pluck which lead to competitive efforts in the popular domain of athletics, and cripples the arterial system on which the individual must rely for work and usefulness in after life. Another consideration pertains to the regulation of the occupation, particularly during childhood and adolescence. On the detection of any discoverable, adequate cause for the arteriosclerosis, however, early in life the aim should be to counteract or overcome them, and at the same time bring into requisition certain hygienic measures for their favorable influence in improving the metabolic processes. Attention must be paid to the foodstuffs that furnish suitable products for both anabolism and catabolism. Oxidation, that most important chemical process in catabolism, by means of which decomposition of albumin, sugars and fats is accomplished with fixation of oxygen, is greatly favored by well-regulated, systematic muscular exercise. This is especially true of the fats, less so of the proteids. The maintenance of a complete nutritive equilibrium is a potent means of preventing those pathologic processes which inevitably result in various forms of degeneration among which arterial changes are apt to be earliest manifested.

GENERAL TREATMENT.

In existing arteriosclerosis, each sufferer must be minutely investigated as regards the extent of the arterial changes, the tension of the pulse, condition of the heart, digestive functions and eliminative power of the kidneys.

Perhaps the majority of cases are dependent on gout. At all events it may be regarded as the type of the causative conditions mentioned under one and two; and in the etiology of individual cases two or more of these factors may be present together. Thus the use or abuse of alcohol plays a not unimportant rôle in the arteriosclerosis of gouty subjects.

HYGIENIC MEASURES.

In this class (due, as above mentioned, to toxic agencies which, in turn, are often dependent on faulty metabolism, acting as irritants of the blood) nothing is so vitally important as a suitable diet and régime. There is, however, no special diet suitable for all cases of gout; no dietetic rules universally applicable. When the metabolic processes are abnormal they vary with the individual cases.

It is highly probable that certain individuals are proof against overindulgence in foods and alcohol. At least, in my view, the amount of aliment that can be ingested without apparent pathologic effects differs within almost inconceivable limits in different persons. On the other hand, when there is distinctly marked evidence either of gormandizing or mere overeating of either the carbohydrates or the more concentrated nitrogenous articles of diet, in gouty individuals we find that a careful regulation of the patient's dietary is obviously helpful. Such subjects, in addition to manifesting gouty features, are, as a rule, plethoric, robust and often inclined to corpulency, and a rigid system of living must be enjoined. A suitable and ofttimes a considerable restriction in the amount of food is a prime requisite. Both fat-forming and urea-producing foods must be lessened, as a rule.

It is highly probable that urea, which is so irritating to the kidneys, acts similarly on the coats of the blood vessels. Again, granular kidneys are a not uncommon concomitant of arteriosclerosis, and when present demand a special diet.

Per contra, spare subjects, whose general tone is low and who are afflicted with arteriosclerosis, require a more generous diet, embracing a liberal allowance of fat-producing foods.

Time and space will not permit me to enter into details concerning a podagric dietary, but broadly speaking, permissible articles of food are: Whole milk, eggs, butter, succulent vegetables, fruits (except strawberries, bananas and tomatoes) and farinacea.

Of animal substances, oysters, fowl and fish (except those that contain much protein, as salmon, mackerel, smoked herring, halibut, salt codfish, flounders, canned sardines, and the like) may be partaken of, while beef and mutton are to be employed, although cautiously. Mohr and Kaufman have shown that the nitrogen excretion is quite as good for the dark as the light meats. Respecting animal food, it may be said that it is beneficial rather than harmful if taken in moderate, suitable quantity.

In the gouty subjects, certain waste products, as uric acid and urate of soda, are retained in the system because too little fluid is taken to hold them in solution

*Read at the Fifty-fifth Annual Session of the American Medical Association, in the Section on Practice of Medicine, and approved for publication by the Executive Committee: Drs. J. M. Anders, Frank Jones and W. S. Turner.

and insure their exit from the system through the natural channels of elimination—the kidneys. It is a misfortune that gouty subjects commonly fail to take water between meals. On the other hand, they should be urged to do so, thus favoring the elimination of effete products through the emunctories and obviating arteriosclerotic, muscular and arthritic changes.

Subjects of gouty manifestations must adopt an open-air life, coupled with regular, systematic muscular exercise, which increases the vigor and activity of the circulation, not only through the vascular system, but also through the lymph spaces and lymphatics. It thus becomes an effective means of forcing from the system the waste products. T. Lauder Brunton[1] has emphasized the fact that the motions of the diaphragm tend to pump the lymph out of the peritoneum and pleura.

The action of the heart, as Kronecker has pointed out, constitutes a sort of massage to the arteries, lungs and pericardium. At each systole the blood stream drives the internal layer against the middle, and the middle against the outer, so that any fluid lying between them will be driven onward into the lymphatics. *Per contra*, during the diastole, these layers will tend to separate from one another and draw fresh supplies of tissue juices from the vasa vasorum.

EXERCISE.

It follows that stimulation of the organic functions of respiration and circulation by systematic, wisely-regulated training will aid in the elimination of waste material and the maintenance of good, healthy nutrition of the thoracic organs and the outlying blood vessels.

In arteriosclerosis the vascular tension is abnormally high, although it varies in degree. Obviously, severe muscular exercise which induces and maintains a notable rise of blood pressure is inappropriate. *Per contra*, mild exercise produces a slight temporary rise of blood pressure, but it falls during its continuance, hence the latter form of exercise favorably influences the circulation by dilating the blood paths and thus lessening the peripheral resistance.

Naturally, it is during the earlier period of arteriosclerosis, or before the changes in the arteries induce markedly increased resistance to the blood stream in the peripheral vessels, that muscular exercise produces its most beneficial effects. As regards exercise in this disease, however, no hard and fast rule can be laid down.

MASSAGE.

In massage we also possess a measure that by its stimulating influence on the circulation through the muscles produces an effect similar to that of muscular exercise. Moreover, in this case, the heart is not called on to put forth extra exertion. Indeed, the blood pressure is lessened by the use of massage, so that the heart's work is correspondingly reduced.

While thus endeavoring to increase the elimination of the waste products through the kidneys, special attention should be paid to the subject of the quantitative estimation of the urea, the chlorids and other metabolic products. My own studies and observations on this head show that in 80 per cent. of gouty subjects the percentage of urea ordinarily contained in the urine is at least from 25 to 35 per cent. below the normal.

I have notes of 12 cases in which the daily output of urea had been on the average 200 grains, and under the influence of such measures as systematic physical exercise, massage and a liberal amount of simple pure water between the meals, the total daily excretion was greatly increased, even to the normal quantity in 3 of the cases.

If the alternate contraction and relaxation of the voluntary muscles could be properly maintained, the return circulation through the veins as well as the lymphatic current would not require the aid of massage. But unless a free circulation can be kept up by muscular exercise, carefully systematized, massage becomes imperative, since it is potent to bring about a rapid blood flow (three times more rapidly than the normal), thus preventing the deposit of micro-organisms, inorganic salts and other particles.

By massage, we not only stimulate the alternate contraction of voluntary and involuntary muscles that are accessible, but also those that are inaccessible, principally by reflex action.

The improvement brought about by this measure extends to the vascular system itself. Edgecombe and Bain have found experimentally that while massage produces an initial rise of blood pressure, this is followed by a decided fall. It was, however, found that severe massage and compression of the abdomen caused a rise of pressure occasioned by the dispersion of the blood in the splanchnic veins. Massage increases the flow of lymph in a striking manner. Now it is the function of the lymphatics to remove the effete matters from the tissues; they also take up the "superabundance of nutritive fluids not immediately required for the nourishment of the tissues." By remembering the principal causes of arteriosclerosis (before stated), it is clear that by a proper regulation of the séances massage becomes a most useful means of prophylaxis by stimulating the functions of the lymphatics, and it may exert a retarding influence in established cases. Finally, massage also exercises a beneficial influence on the glandular secretions and the nervous system.

In the disease under consideration, in which the arterial pressure is exalted, warm baths, which lower the tension both in the arteries and veins, are most serviceable. They also materially assist in the process of elimination of waste materials through the sweat glands.

I am fully satisfied that the agencies to which I have referred, namely, an appropriate diet, systematic exercise, massage and warm baths, are of major importance as compared with the medicinal treatment in the management of this class of cases in which poisons are circulating in the blood, and these in turn dependent on perversion of metabolism.

MUSCULAR STRAIN AS A FACTOR.

The cases dependent on overexercise or muscular strain are numerous. For this form of arteriosclerosis, the occupation is often responsible, and almost equally common are the instances occasioned by the abuse of the cardiovascular mechanism in competitive sports. While possessing the power of accommodation in a high degree, the mechanism may yet be overtaxed in young subjects and the basis be laid for sclerotic changes early in life.

In view of the voluminous testimony as to the injurious consequences on the heart and vessel walls of the diversified games indulged in under our modern civilization and the effects of the newer, strenuous life, it is encumbent on the medical profession to urge temperance in the matters of competitive athletics and strain, both mental and physical, without delay. It has been well said that infections and accidents barred, death generally comes through arteriosclerosis.[2] I hold it to be the

1. The Lancet, Oct. 12, 1895.

2. John L. Davidson, Canadian Practitioner and Review, Sept., 1901.

bounden duty of the medical practitioners, who have doubtless been vividly impressed with the increasing number of cardiovascular conditions due to the general tendency in the direction of overexercise, to utter a note of warning to the public, and particularly to those having in charge our universities and other schools of learning.

We may well ask ourselves, do we, as a profession, which is the natural teacher and guardian of the populace on the subject of physical training, manifest due solicitude for the young men of the present and future generations? In an age which furnishes numerous examples of young men who, measured by Cazala's rule, are threescore years of age, it may well be inquired, what are the causes of this decay? May not the chivalry and enthusiasm of the football field and other violent forms of competitive sports form one of the chief sources of racial decline?

In this group the important element of treatment is efficient prophylaxis. Many of these cases may thus be held in check, but I have never observed a complete subsidence of the arterial changes.

Pulse Tracing 1.—Case 1, before taking nitrites.

Pulse Tracing 2.—Case 1, after taking nitrites four days.

MEDICINAL TREATMENT.

It is not within the scope of this paper to discuss the treatment of the recognized secondary affections, such as fibrous myocarditis, cirrhotic nephritis and cerebral softening, but attention is called only to the medicinal treatment of the arterial changes. Individual cases, however, must be most carefully studied as regards the associated conditions, and these must receive due consideration. The principle symptoms of this disease are due to a reduction of the lumen of the vessels and loss of elasticity of the coats, owing to the sclerotic changes, conditions that diminish the blood supply to the various viscera.

It may be seriously doubted whether the disease is ever arrested by medicine. We may, however, retard its progress to some extent and restore the normal rapidity of the blood current and lower the blood pressure by dilating the arterioles. The remedies employed for this purpose are nitroglycerin, the nitrites and potassium iodid.

THE IODIDS.

According to certain writers, the validity of the claims of the iodids has not been definitely shown, but they have long been lauded by others in the treatment of arteriosclerosis. Except in cases due to syphilis, the results are in no wise comparable in brilliance to those following the careful application of hygienic measures mentioned above, and the use of the nitrites. Billings says:[3] "The iodids that have been so commonly used I have no confidence in, excepting in syphilitic cases." I have had considerable experience of their use in this disease, enough to allow of the inference that the long-continued use of the iodids is serviceable, in some cases at least. I hold that the iodids are without value as a means of reducing the vascular overtension, in the presclerotic stage. In marked arteriosclerosis, however, iodin preparations exert a "resolvent action by stimulating phagocytosis" (M. Huchard). This conclusion is corroborated by the available experience of other observers, but unfortunately these can not be submitted here for lack of time and space.

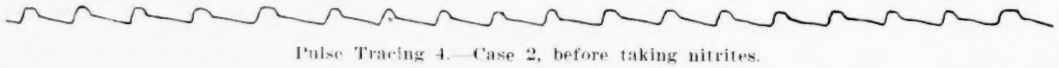
It is difficult, however, to interpret the results obtained from the use of the iodids, since it not seldom happens that noticeable remissions in the arterial tension are seen during periods in which no special treatment is employed. We are sadly in need of reliable data that shall indicate their precise influence, more especially in diminishing the arterial resistance.

Obviously, the iodids are called for, and extended observations have shown them to be of decided value in cases showing a luetic taint. The use of nitroglycerin and the nitrites to relieve high arterial tension is a customary practice among clinicians. During clinical observations of the pulse, the palpating finger is sensible of variations in the tension, but it fails to convey precise knowledge as to the extent of the fall resulting from treatment.

I have appended a few spygmographic tracings which indicate the results of treatment with nitrites and nitroglycerin in the arteriosclerosis of chronic Bright's disease, as well as that associated with other conditions. A glance at these tracings will convey to the observer a better idea of the degree of lowering of the blood tension than is furnished by palpation of the radial and other accessible arteries. For the sake of clearness, brief notes[4] of three cases experimented on will also be given:

Pulse Tracing 3.—Case 1, after taking nitrites one week.

CASE 1.—R. F., aged 68 years, colored, weight 120 pounds, height 5 feet 2 inches, single, a patient in the Philadelphia Hospital. He had used beer, gin and whisky to excess since the twentieth year of life. His mother died of phthisis and his father of dropsy, following asthma. Patient had had acute rheumatism ten years previously and had been subject to renal asthma and palpitation for four years. The physical signs indicate a moderate degree of emphysema and cardiac hypertrophy: the arteries are cord-like and the tension high. The urine is of low specific gravity (1006), contains a small percentage of albumin, but no casts.



Pulse Tracing 4.—Case 2, before taking nitrites.

Strychnin, which had been administered for several weeks, was discontinued and a careful pulse tracing made. (See Pulse-tracing 1.) The following preparation, highly recommended by M. Huchard,[5] was then given: Sodii nitrite gr. xxx.

3. International Medical Magazine, May, 1895.

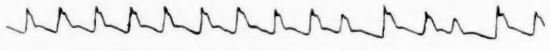
4. I am much indebted to Dr. Wm. E. Hughes, from whose service Cases 1, 2 and 3 were selected, for permission to make these observations.

5. New York Medical Journal, Oct. 24, 1903, p. 804.

potassii nitratis dr. 2 ss., sodii bicarb. dr. 5, aq. destil. oz. x, M. S. oz. ss. t.i.d.

After the lapse of four days a tracing was taken (Tracing 2), and at the end of seven days another (Tracing 3).

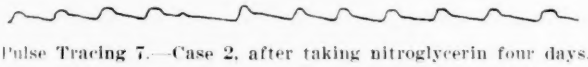
A comparison of Tracing 1 with Tracing 3 will show that the height of the primary, ascending wave or upstroke is distinctly greater for the latter than for the former. This would indicate greater distension of the elastic walls of the vessels as the result of the use of the nitrites. Again, the dicrotic wave, which is scarcely noticeable in Tracing 1, is more prominent in Tracing 3,



Pulse Tracing 5.—Case 2, after taking nitrites one week.

and slight post-dicrotic waves are also observed. From this effect on the pulse tracing we may infer that more efficient propagation of the blood current to the capillaries is the result of the treatment. Unfortunately, the patient now voluntarily left the hospital and was lost sight of.

CASE 2.—W. H., aged 61 years, weight 135 pounds, height 5 feet 1 inch, a native American, admitted into the Philadelphia Hospital. He had smoked since his ninth year, and had been guilty of excessive indulgence in gin for a considerable period of time. The family history revealed nothing of etiologic importance. Patient had had diseases of childhood. At the



Pulse Tracing 7.—Case 2, after taking nitroglycerin four days.

age of 40 years, he fell from a building (32 feet in height); in this accident he sustained a fracture of the clavicle and several ribs, and at present his thorax is greatly deformed (dorsal kyphosis). Had rheumatism (subacute) in 1902, and also since then at intervals. In the spring of 1903 was troubled with dyspnea on exertion and malleolar edema.

The physical signs on admission show arteriosclerosis, combined with an aortic stenotic murmur and tense pulse, and moderately hard arterial walls. The nitrite (formula above) was employed. Tracing 4 was made prior to its use, and Tracing 5 after it had been administered for one week.

CASE 3.—G. B. T., native of United States, aged 42 years, widower, height 5 feet 10 inches, weight 150 pounds; occupation, trackman. The following is, in brief, the family history: Mother died of cardiac dropsy, father of kidney trouble; one brother of heart disease and another of pneumonia. Patient had had diseases of childhood, acute rheumatism in 1888 and at various times since then, also several bad attacks of la grippe. The patient had worked laboriously and used alcohol to excess for twenty years; there is no history of syphillitic infection obtainable. The illness for which he was admitted began two weeks previously as rheumatism of ankles, hips and shoulders.

The physical examination on admission indicates an existing

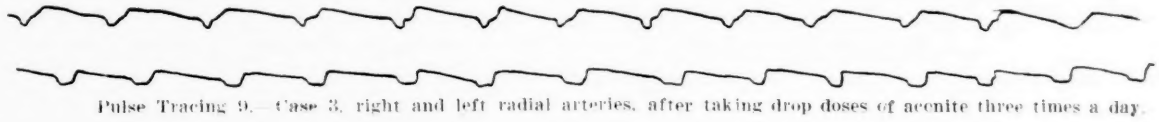
Pulse Tracing 6.—Case 2, after nitrites had been discontinued for two days.

double valvular lesion, namely, mitral regurgitation and aortic stenosis. The arteries were palpable, moderately hard and quite tense, and the tension of his right radial appeared to be greater than that of the left. This is also shown in Tracings 8 and 9, the former being that of his right and the latter of the left radial artery. This patient had been taking drop doses of the tincture of aconite thrice daily.

At the end of one week of treatment with the nitrite solution, Tracing 10 (which see) was made from left radial, and indicated a decided modification of the tension as the result.[6]

Pulse Tracing 8.—Case 2, after taking nitroglycerin two weeks.

Without stopping to multiply instances, it may be further remarked that the results of these sphygmographic studies made clear the difference between various conditions described under the title of arteriosclerosis. Thus the blood pressure is not materially increased in many cases dependent on senile degeneration, and the same is true of those that arise in chronic diabetes and certain toxemias. Again, the nitrites whose action is so striking in lowering exalted tension are



Pulse Tracing 9.—Case 3, right and left radial arteries, after taking drop doses of aconite three times a day.

A comparison of these two tracings will show that a striking change was produced by the remedy, chiefly in the direction of the lowered blood tension. This was also appreciable to palpation at intervals. Tracing 6 was made two days after the nitrite was withdrawn in Case 2, thus showing that its favorable effects are not permanent.

The patient was now put on nitroglycerin gr. 1/100, increased to gr. 1/50 t.i.d., and at the end of four days

Pulse Tracing 10.—Case 3, left radial, after taking nitrites one week.

Tracing 7, which closely resembles the original tracing, was made.

After the lapse of ten days more, or a two weeks' course of nitroglycerin (gr. 1/50 q. d. during the second week) Tracings 7a and 7b were made.

While this remedy has considerably modified the original tracing, it exerted a less favorable influence by far than the nitrites (vide Tracing 5), although it is probable that the dose was not large enough.

strongly indicated and most effective in that category of cases in which there is an early and marked increase in the arterial pressure, and the heart as a consequence hypertrophied.

They are often found in association with disturbances of the metabolic processes (e. g., gout) and in the hyperplasia for which constant muscular strain is responsible, after removal of the cause. One further point remains to be emphasized: it is that in the most skilled hands sphygmographic records differ, "not only in different persons, but also on successive applications to the same person."

All instances treated either by the nitrites or the nitroglycerin in ascending doses, taught the practical lesson that while a favorable effect is exerted promptly by these remedies, persistence over long periods of time is a prime necessity, otherwise the improvement gained will be speedily lost.

6. The diagnosis of obscure aortic aneurism had been tentatively made during life owing to the differences in the pulse tracings on the two sides, but the patient subsequently died, and the autopsy did not show the presence of an aneurism.

DISCUSSION

ON THE PAPERS BY DRS. THAYER AND BRUSH, DRENNEN, DOCK, BILLINGS, CABOT, OSLER AND ANDERS.

DR. ALFRED STENGEL, Philadelphia—The subject of arteriosclerosis presents itself to physicians in a somewhat different light from that in which it appears to the pathologist. In practical medicine we recognize it as a disease resulting from a number of causes and of importance as an intermediary condition that determines a great variety of organic diseases. It is of comparatively little importance to be able to recognize arterial disease when angina pectoris, interstitial nephritis, a high grade of chronic myocarditis, or some form of central nervous disease has developed. If we are to accomplish much in the treatment of the disease, it must be recognized at an earlier stage, and from this point of view two questions are of essential importance: The diagnosis by direct examination and the recognition of the etiologic factors. The causation is somewhat uncertain and notwithstanding the evidence brought forward by Dr. Cabot, I confess myself still convinced that alcohol is an important factor; other causes of importance are overexertion in athletics and in laborious occupations, chronic toxemias and infections. The importance of these latter conditions lies in the fact that they may be controlled to a certain extent, more at least than the habits of individuals. I have had occasion elsewhere to state that in acute infectious diseases, when the heart and blood vessels have suffered during the attack, a seemingly complete recovery may ensue, but subsequently under some stress or strain the dormant conditions in the vascular system again become apparent and advance progressively. The importance of this is that the convalescence of such diseases should be conducted with greater care than has been customary in the past. I remember the feeling of surprise with which I read the statement of a prominent physician speaking at a meeting of the British Medical Association to the effect that convalescence from typhoid fever should be considered to extend over the period of a year or longer, and that by the exercise of care during this prolonged period the end results of the disease could be obviated. The more I grow in experience of this disease, the more I become impressed with the soundness of this view. Overexertion, cares and strains of all kinds should be avoided for a very long period after all of the infectious diseases, but notably after typhoid fever. With regard to athletics, my experience extends over a period of some thirteen years, and I have become convinced that not rarely excessive and ill-directed physical exertion may lay the foundations for cardiovascular disease that may perhaps be dormant in the more active period of life, but becomes pronounced when the power of compensation begins to grow feebler with advancing age. Athletics must be controlled and properly directed if good and not harm is to come from such sports. With regard to the direct diagnosis of the condition, there are certain functional changes in the circulation, notably a sustained arterial pressure and a lengthening of the first heart sound, which are among the earliest physical signs. The diagnosis at a period when the disease has become well established and of an advanced stage is readily made, but the recognition in the beginning is generally difficult and often quite impossible.

DR. F. C. SHATTUCK, Boston—The multiplicity of the causes of arteriosclerosis has been brought prominently before us this morning, an illustration of the fact which age and experience brings home to us all—that causes in medicine are seldom single. A diseased state is generally the result of several factors, the relative importance of each not being always easy to measure. It seems to me Dr. Cabot has shown clearly that alcoholic excess is not alone and by itself a cause of arteriosclerosis. But he has not shown that it is not and may not be a contributing cause, perhaps potent. His statistics deal with a single class, pauper drunkards, men who have not led lives of intellectual activity or of mental or physical strain. Observation has led me to suspect that worry and the strenuous life, especially as we see it in business and some professional men, lead through defective metabolism to increased arterial tension and the widespread changes of arteriosclerosis. Statistics in absolute proof of this matter are not easy, if possible, to collect. In this class may not alcohol hasten and heighten arteriosclerosis? And is not this the class in which arteriosclerosis is oftenest seen? The men who tolerate alcohol best are not the brain workers and weight carriers. They are men who work with their muscles outdoors, or whose occupations, temperament and environment do not involve continued strain. The relation of climate to toleration of alcohol can not be ignored. In fine, we really know but little about the genesis of arteriosclerosis save that it is a matter of great complexity.

DR. WILLIAM KRAUSS, Memphis, Tenn.—The anatomic classification of this disease is fraught with difficulty. When you recall the amount of work which has been fruitlessly expended on differentiating between croupous and diphtheritic inflammation, you can understand what I mean. Dr. Welch has given us a beautiful lecture. He has shown us that essential arteriosclerosis is associated with changes in the intima whereby there is a division of the internal elastic lamina and a proliferation between the two layers. It was Thoma who pointed out that a giving way under pressure of the outer coats of the blood vessels is what calls for other means of getting contraction, hence there is a request for an overgrowth of connective tissue in the intima to overcome that dilatation. Etiologically we find the disease associated with causes that result primarily in the circulation in the body fluids of toxins producing parenchymatous degenerations in the solid organs, and it is not too much to assume that similar changes take place in the heart and vessels. This primary dilatation is not so much the result of increased pressure as of diminished resistance from injury to the elastic and muscular elements in the media. There may also be disease of the kidneys, and this brings up the practical inseparability of the two. For instance: Dr. Thayer mentions malaria as a cause, but malarial fever must be severe and of long duration to produce such grave changes, and in all such cases we have fibrosis in the kidneys. Severe malarial fever is also usually associated with temporary albuminuria, which permits the assumption of parenchymatous changes in the kidneys. I know a man who had yellow fever twenty-five years ago with suppression of the urine; that man can not drink alcohol to-day without raising his blood pressure to such an extent as to cause violent throbbing in his temples; these are the people in whom alcohol will produce changes in the blood vessels. There are great difficulties in the way of an etiologic classification, as attempted by Dr. Thayer, from histories of cases the subjects of which have left the hospital. With their present system of clinical clerks causes not heretofore recognized as factors in the disease may now be discovered. It is not the diseases so much as the pathologic changes in given cases, that have a bearing on the etiology. Certain irritants in the blood stream may produce inflammation in the intima and cause a proliferation resulting in intimal thickening; this may possibly be caused by the uninterrupted use of mercury as suggested by Dr. Drennen. When considering this problem of syphilis I should prefer to evade the lines laid down in the symposium and study syphilitic disease of the vessels as a whole. Then we can classify this with Heller's *aortitis luetica*, later gummatous changes from infection through the lymphatics in the periphery, and confined to the adventitia mostly and seen in smaller arteries, next the endarteritis obliterans, which occurs in still smaller vessels, and finally essential arteriosclerosis, which is more or less diffuse.

DR. CHARLES G. STOCKTON, Buffalo—I shall confine myself to two points and first reiterate the importance of a matter in relation to pain in the abdomen depending on arteriosclerosis which oftentimes is not suspected. Such a pain not infrequently occurs as the result of the disease of the heart muscle depending on arteriosclerosis; when abdominal pain does occur in such cases the disease will be found to be rather far advanced. I have seen a number of such cases and some of them I have reported. All probably have noticed the abdominal pain which occurs in those who have no palpable thickening of the arteries, but which depend on arteriosclerosis. In regard to the treatment, I do not think there is any doubt at all that the matter of treatment should be considered before changes

have resulted in the arteries, or before the arteries have revealed changes that direct our attention to them. Nevertheless I believe that when the gross lesions have appeared the condition is not absolutely hopeless, and I have pointed out that such cases are the ones the average physician will be called on to treat, for they make up a large group. Some years ago it occurred to me to place non-syphilitic cases who were able to lead lives marked out for them under proper management as to dietetics, exercise, medication, etc., and see what would happen. Naturally this group was not large, but it offered some encouragement. I will not go into the detailed histories of these cases, but I have in mind three who were under this treatment for from between five and seven years; they had marked arteriosclerosis and manifested renal lesions, and in one case there were certain suspicious central nervous symptoms. These patients are still living and enjoying better health to-day than when they came under observation. The plan of treatment was very simple and the same plan was adopted for all. There was a restricted diet, regulated exercise, the amount of fluid taken was regulated, as was the amount of alcohol, and finally was followed by the systematic use of baths that would have a tendency to dilate the arterioles and capillaries without producing a general relaxation. Instead of using the ordinary warm baths better results were obtained from short hot-air or vapor baths, not for their eliminative effect so much as for the purpose of opening up the capillary vessels. As to the use of drugs, I think that doctors differ as to the exact time when nitrites or nitroglycerin should be given. In my experience I have found it necessary to give these drugs frequently if I wish to obtain a uniform effect. It is far better to give them very frequently rather than two or three times a day. This rule applies to the use of any nitrite. I do not think the gentlemen need be alarmed when I say that nitroglycerin should be used every hour. It should be remembered that patients soon become tolerant of nitroglycerin. With regard to the iodids, I believe that without them we will not have successes in cases of arteriosclerosis. The long continued use of the iodids, the hot or vapor baths, nitroglycerin in frequent and proper doses, are all important in the treatment of arteriosclerosis in which so little stride has been made in therapeutics.

DR. S. J. MELTZER, New York City—Dr. Thayer drew his conclusions from the conditions of the radial artery, and one of his conclusions was that work, manual work, is the most essential factor in the production of arteriosclerosis. It is necessary to distinguish between general and local arteriosclerosis. The latter might be produced by local causes, among which we might mention (1) continued injury of a certain part, and (2) increased activity of that part. With increased activity of an organ there is a greater flow of blood through it, which is a potent factor in the production of arteriosclerosis. Now, in manual work both mentioned factors are operative in the production of a local arteriosclerosis in the vessels of hand and arm; there is continual injury and increased activity which might favor an early development of arteriosclerosis in the radial artery. But the presence of this localized arteriosclerosis alone can hardly be taken as an unmistakable indication of the existence of general arteriosclerosis. The same argument holds good for the reversed condition: the absence of a sclerosed radial artery is no proof of the absence of an arteriosclerosis elsewhere, and the absence of a sclerosed radial artery in syphilitics who have never done manual work is no proof of their not having extensive arteriosclerosis elsewhere in the body. With regard to alcohol, I wish to express great admiration for the straightforwardness with which Dr. Cabot has given us his results. Dr. Cabot has done much work on alcohol and his results led him to views which made him a *persona grata* in Massachusetts and elsewhere with men and women who are averse to the use of alcohol in health and in sickness. I am afraid that Dr. Cabot's assertion that arteriosclerosis in alcohol is a myth will be misinterpreted by this same unscientific class of public agitators. As to the correctness of his conclusions I have some doubts. He stated that in the autopsies the peripheral arteries were examined. He did not state that the arteries belonging to the splanchnic area were also examined. We have heard to-day, in the masterly paper on the pathology of arteriosclerosis, that according to Romberg and his school it is in the splanchnic area that arteriosclerosis is liable to occur. If that is so, and if Dr. Cabot has not examined the splanchnic area, his conclusions that alcohol does not lead to arteriosclerosis would not yet be well supported. I have a personal interest in that question. Two years ago, in a paper read in Boston, I went on record in favor of the use of alcohol in disease. I stated then that the effect of alcohol on the circulation is not to influence the blood pressure, but the distribution of the blood. Alcohol does not increase the blood pressure, but everybody knows that alcohol causes a dilatation of the cutaneous vessels. Now if these vessels are dilated while the blood pressure remains the same, there must be a compensatory constriction of the vessels somewhere in the body. I suggested then that this takes place in the vessels of the splanchnic area. And it is perhaps essentially in these vessels where alcohol causes sclerosis. In the above mentioned paper I stated that alcohol in health is sometimes a curse; alcohol in disease is often a blessing. In repeating it I would now state: alcohol in disease is often a blessing; alcohol in health is very often a curse.

DR. ROBERT H. BABCOCK, Chicago—The thoughts I had in mind have been so clearly presented by Dr. Shattuck that, as a matter of fact, he has taken the wind out of my sails. I should say, however, in regard to alcohol, that convincing as Dr. Cabot's statements appear to be, they impress me as not convincing in their refutation of the etiologic influence usually attributed to alcohol and as emphasizing the error likely to occur from the attempt to consider any one factor by itself. For example, the case he reported was of a young man who took a quart of whisky daily for ten years. Now, theoretically, that may be all right, but is it quite fair in estimating the influence of alcohol to draw conclusions from such a case? To be sure, whisky contains about 50 per cent. of alcohol, but there may be other forms of alcoholic drinks which may be more injurious than whisky. For instance, there are Germans who consume 25 to 30 liters of beer daily, and when our German confrères estimate the influence of alcohol in the production of arteriosclerosis they attribute importance not alone to the alcohol, but to other factors residing in the consumption of such enormous quantities of beer. These are the intake of excessive amounts of fluid and the large percentage of nutritive material contained in the beer. It is asserted by some, notably French writers, that alcohol in excess produces hypertrophy of the heart. The Germans, on the other hand, as Krehl, believe that such is not the case, that alcohol in concentrated form occasions not hypertrophy, but fatty degeneration, but that hypertrophy may result from excessive use of beer and this only in consequence of the large amount of nutritive material and fluid taken into the system. So I apprehend it may be as regards arteriosclerosis. There must be something else in addition to the alcohol if chronic alcoholism is to set up arterial changes. There is, I believe, an element of strain on the vessels which must be considered when individuals consume 25 to 30 liters of beer daily. It is particularly strain of an intermittent kind which has a causative influence, and in the consumption of large quantities of alcohol the strain exerted is of an intermittent sort. Dr. Welch emphasized the fact that arteriosclerosis may be endured for many years without shortening life. I desire to add that it is the individuals with arteriosclerosis who are thin who often reach advanced age; whereas, those persons whose arteriosclerosis is associated with corpulence are especially liable to be cut short in the prime of life from some of the visceral changes depending on or connected with vascular decay. In such persons we are apt to recognize hypertrophy of the heart and oftentimes sclerosis of the coronary arteries.

DR. F. R. WEBER, Milwaukee—I think that we have all come to the conclusion that the pathogenesis of arteriosclerosis in its various forms concerns itself primarily with changes in the arteriomuscular system and secondarily with changes in the intima. We must study simple parenchyma—protoplasm of

the muscle cell—and chemically consider its life nucleus and its receptors or side chains. These receptors partake of the characteristics of the aldehyde and amine groups. If we are to write the history of arteriosclerosis we must go back to simple chemistry, and to the action of nutrient and toxic agents on protoplasm. Living protoplasm has the capacity for intense chemic reactions, and Loew has made a clever attempt at the classification of toxic agents. 1. Agents acting by chemical substitution. Thus the phenols react easily with the aldehyde group, and others with the amine group. 2. Oxidizing agents like permanganate of potash, phosphorus, arsenic, etc. 3. Catalytic toxic agents like chloroform, ether, alcohol, chloral hydrate, etc., of no intense chemical activity and yet of large toxic power. 4. Protein bodies readily unite with bases, acids and alkalies. Lead may enter thus and organic life deteriorate. Sodium chlorid, potassium chlorid and many other salts are concerned in osmotic pressure. Barium chlorid, like adrenalin, has a direct action on the walls of the arteries and increases blood pressure. Administered experimentally for a length of time it produces obliterating endarteritis. In conclusion we mention toxic organic bases, especially toxins and proteins which react specifically with living protoplasm. A more complete system of toxicology as regards living protoplasm, and experimental work along these lines in laboratories of research, will solve the question of arteriosclerosis and aid in its prevention.

DR. BOARDMAN REED, Philadelphia—There is one point which has been overlooked in the consideration of arteriosclerosis, and that is the matter of the dosage of alcohol. Dr. Cabot has proved that large doses, a pint to a quart of alcohol taken daily by old topers, do not apparently cause an undue percentage of arteriosclerosis, and it seems to me that this is not incompatible with the views generally held that alcohol may at least indirectly produce that disease. It is probable, in my opinion, that when arteriosclerosis is produced, in persons who drink alcoholic beverages, it is indirectly and through the gastrointestinal tract. We know that alcohol is a poison to protoplasm and all the glandular structures, the liver, gastric glands, etc.; that alcoholic beverages in the usual doses have the effect of lowering the action of the gastric glands. Therefore, an injurious effect of alcohol on the arteries can be proved, since it is also an established fact that one way in which arteriosclerosis can be set up, is through toxins formed in the alimentary tract. Alcohol impairs digestion and thus indirectly causes arteriosclerosis, but, it is also known that when one drinks largely of alcohol in concentrated form, as in whisky or gin, less fermentation of putrefaction results than in the case of moderate beer or wine drinkers. All clinicians have noted that when a man is indulging largely in alcohol he takes but little food, and only a small amount of indican may appear in the urine. Therefore, may it not be concluded that the more usual indulgence in alcohol can produce arteriosclerosis through its effect on digestion? Whisky-soaked men may escape the danger in this form because they partake so sparingly of food. They live practically on alcohol, which is an antiseptic and present less indican in the urine, and less of the other products of a faulty metabolism than moderate drinkers. The large amounts of concentrated spirits poison them in other ways, but may tend less to the production of arteriosclerosis than wine and beer in the usual quantities.

DR. HENRY SEWALL, Denver—One of the most widespread applications of clinical observation in medicine to-day is to be found in the use of certain instruments for measuring the human blood pressure. These instruments are, for the most part, too one-sided or incomplete in their usefulness: they usually measure solely either the systolic or the diastolic blood pressure. I was very glad to hear Dr. Anders dwell on the physiologic function of the phases of heart activity, as a clinical register of arterial blood pressure and its variation, a thing that is so apt to be disregarded. The pulse seems to me to manifest two different characters, either of which may indicate the presence of arteriosclerosis: (1) a pulse of continuous high tension and incompressibility; (2) a pulse unaccompanied by any valvular lesion, which is hard and has a high tension at the acme of the pulse wave, but which almost collapses with diastole of the heart. Now, as regards the nutrition of the tissues in general and of the arteries in particular, what are the relations of systolic, diastolic and mean arterial blood pressure? The respective values of these physiologic phases of blood pressure probably have intimate relations both to the development and effects of the pathologic condition of arteriosclerosis.

DR. A. MCPHEDRAN, Toronto, Canada—I desire to correct a statement made by a previous speaker by pointing out that the consumption of alcohol *per capita* in Canada is reported to be less than in any other civilized country. As to the effects of alcohol on the arterial system, it is of interest to refer to a discussion which took place at the British Medical Association a few years ago in regard to an epidemic of neuritis among beer drinkers in the midland counties of England. It was found on investigation that the disease was produced by arsenic with which the beer was contaminated. Sir William Gairdner of Glasgow said that while whisky was much drunk in his city, he had never seen a case of alcoholic neuritis. It is evident that some accessory condition is necessary to enable alcohol to produce either neuritis or arteriosclerosis. It is worthy of note also that a variability in the vitality of tissue exists in different persons, and that to this may be ascribed the occurrence of disease in some while others escape. As to the effects of overstrain, it seems certain that a continual strain is much more injurious than an intermittent strain. In the days when the British soldier had to carry his knapsack, and walk in a constrained attitude, aneurism was of much more frequent occurrence than now, when the utmost freedom of body is allowed.

DR. A. JACOBI, New York City—I should like to ask Dr. Thayer the ages of the patients who had typhoid fever and who later developed arteriosclerosis. Next: What can we do with these cases of arteriosclerosis dependent on syphilis? Here we use mercury and the iodids, and more or less successfully. That is why it strikes me as too sweeping to attribute some symptoms of arteriosclerosis to the use of mercury. I believe most of us use mercury and the iodids whenever we have such a case of arteriosclerosis of syphilitic origin. Dr. Welch said that one of the causes of hypertrophy of the heart was local obstruction; he said this when speaking of arteriosclerosis as a cause of myocarditis. We should not look for one cause in the production of cardiac hypertrophy; there may be a combination of circumstances and a number of causes working in the same direction. Among the cases are the following: There are the cases studied by Gèrmain Sée, Virchow and others, of congenital smallness of large and small arteries all over the body, which cause a peculiar form of congenital chlorosis of women and sometimes men, which appears to depend on nothing but this original smallness of the arch of the aorta and the arteries in general; this may give rise to obstruction in the peripheral circulation. In connection with this condition there is frequently no hypertrophy. The heart may even be small, while at the same time the arteries are small or a heart of normal size, with the structure not absolutely normal; the muscle may be flabby and sometimes there is a fatty degeneration. In cases of pernicious anemia, where this condition is sometimes found, there is at work another cause. So I think it is well worth while to doubt in connection with many cases whether the contraction of the arteries or the local obstruction in the arteries would be by itself a sufficient single cause of the hypertrophy. It does not appear to be so.

DR. W. S. THAYER—I agree with Dr. Meltzer that one must make many reservations before applying figures which relate only to palpable radial arteries, to arteriosclerosis in general. As I have already stated, however, it seems to me probable—and I think most clinicians will agree with me—that changes in radial arteries sufficient to justify a note in the course of a routine ward visit, in individuals under 40 or 50 years of age, are associated in a considerable proportion of cases, with sclerotic changes elsewhere. Our figures and our conclusions, however, relate entirely to the palpability of the radial arteries.

DR. C. TRAVIS DRENNEN—I am grateful to Dr. Jacobi for what he has stated regarding the use of mercury in syphilis. The purpose of this paper was not to disparage the use of mercury, but to protest against the methods which are and have been commonly adopted by the profession at large for many years of administering mercury for practically many years without interruption.

DR. RICHARD CABOT—I think that we can not accurately determine the diastolic blood pressure with Stanton's modification of the Riva-Rocci instrument, but that we can measure it with an accuracy sufficient for the purposes for which the instrument is likely to be used. While I have not sufficient experience to take issue with the views expressed about competitive athletics, I should like to refer the gentlemen to the March number of the *Harvard Graduates' Magazine*, where there are some statistics of importance on the health of Harvard oarsmen. Rowing is a form of immoderate athletics, if there is any, but the heart and arteries in these statistics do not show changes confirmatory of what has been stated. I certainly agree with what Drs. Shattuck and Babcock have said regarding multiplicity of the causes of arteriosclerosis. The activity of alcohol as a cause acting alone I have not been able to perceive. Replying to Dr. Meltzer, at the Massachusetts General Hospital autopsies the splanchnic area was investigated and none of the changes referred to was found. I agree with Dr. Meltzer, alcohol is a curse in health, whether in large or in small quantities, and I act on that belief, but when one is making investigations or doing research work he must confess to what he finds. What I found was absolutely opposite to what was expected, and I gave the figures as I found them.

THE RELATION OF CHEST CONTOUR TO LUNG CAPACITY.*

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Early in the history of medicine clinicians recognized that the shape of the chest varies in disease. Thus the emphysematous or "barrel-shaped" chest, the phthisical or flat chest, and the various unilateral deformities of pleurisies, etc., are mentioned under various names by eminent writers.

Apparently, however, the fact that the contour of the chest varied in different individuals not subject to disease was not recognized or was considered of no value until in the beginning of the last century, when Chomel[1] published the first work on thoracic diameters and insisted that diameters and not circumference were the true basis for estimating lung capacity. The next publication along this line was by Fourmentin,[2] who, working along the lines of Chomel, determined the "thoracic index," using the formula adopted by craniologists in determining the cephalic index, i. e.:

$$\frac{\text{Transverse diameter} \times 100}{\text{Dorsoventral diameter}} = \text{index}$$

This he found to vary for apparently normal individuals between 120 and 140, and states that whenever the index fell below or above these numbers the subjects were cachectic. He also, by means of a modified panagraph, obtained reduced tracings of the thorax, apparently being interested, however, in such abnormalities as pleurisies and tuberculosis only.

A few years later (1884), E. Maurel,[3] realizing that thoracic measurements are for the purpose of estimating lung capacity, using a cyrtometer for the purpose of making tracings of the chest contour, arrived at the following conclusions:

1. "Perimeter" is not a satisfactory basis on which to estimate lung capacity because for the ellipsoidal figures having an equal perimeter the ones whose diameters most nearly approach an equal value, contains the greatest area.

2. The method of estimating capacity by means of anterioposterior and transverse diameters is more accurate than by means of the perimeter.

3. The most accurate method is by means of the contour area as taken by the "cyrtometer," i. e., the graphic representation on cross-section paper ruled in sq. cm., of a shape of cross section of the chest.

Maurel, also, by using the thoracic index, confirmed the finding of Fourmentin regarding the average index.

Since this time numerous observations have been made by clinicians and anthropologists as regards the two diameters of the thorax, but it remained for E. O. Otis[4] to determine their average measurements. These he gives as 7.3 inches ((18.5 cm.) for the anteroposterior and 9.6 inches (24.3 cm.) for the transverse diameter.

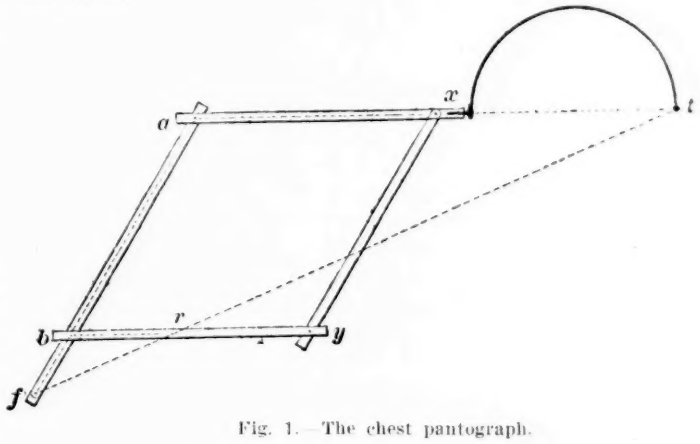

Fig. 1.—The chest pantograph.

In 1897 Hutchinson,[5] from measurements of enlisted men, determined the average index of the chest. Instead, however, of using the index of Fourmentin, he adopted the less cumbersome method of dividing the smaller (dorso-ventral) diameter by the larger (transverse) diameter. By means of this formula he determined the average index to be 0.725. Contrary to the usual belief, however, he makes the following unique assertion:

1. The tubercular type of chest is not a flat chest, as is usually taught, but one tending toward the round or barrel shape, basing his conclusions on the indices of the few but well-selected cases of tuberculosis, the measurements of which he was able to obtain.

2. The round type of chest is an undeveloped chest, because of the following considerations:

a A study of comparative anatomy shows that the higher we rise in the scale of mammalia, the more the transverse diameter increases at the expense of the dorso-ventral.

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* Read at the Fifty-fifth Annual Session of the American Medical Association, in the Section on Pathology and Physiology, and approved for publication by the Executive Committee: Drs. V. C. Vaughan, Frank B. Wynn and Joseph McFarland.

1. Chomel: Mensuration du thorax. Gaz. de Hop., Paris, 1828-9, vol. i, p. 213.

2. Fourmentin, Emil J. J. F.: Etudes precises sur les deformations de la poitrine avec applications a la pleuresie et a la phthisie. Indices thoracique, Paris, 1874, No. 411.

3. Maurel, E.: Mensuration de cage thoracique. Bull. de la Soc. d. Anthropometrie d. Paris, 3 S., vol. x, p. 345, and De la Cyrtographie Stethometrie et Stethographie Bulletin de Therap., etc., Paris, 1887, vol. cxiii, p. 450.

4. Otis, E. O.: International Med. Mag., vol. iii, p. 85.

5. Hutchinson, Woods: Some Deformities of the Chest in the Light of Its Ancestry and Growth, THE JOURNAL A. M. A., vol. xxix, Sept. 11, 1897, p. 512.

b The growth of the human thorax both during gestation and childhood shows a corresponding increase of the transverse at the expense of the dorso-ventral diameter.

As one reviews the literature of the subject of the thoracic indices or contours, he is struck by the frequency of reference to lung capacity, but still more striking is the paucity of observations on capacity and the utter lack of data showing the relation between either indices or contours and capacity. The object of the work intended in the present paper is to determine, if possible, if there is any relation between contour areas, contour indices and lung capacity.

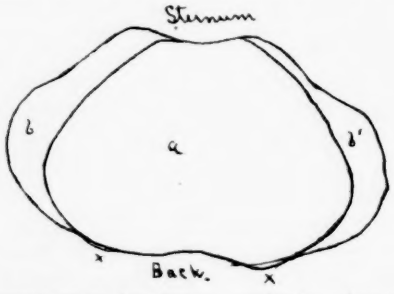

Fig. 2.—Superimposed tracings at expiration showing the difference in area between the broad and deep chests. The broad chest is a tracing representing the contour of the chest of one of the oarsmen of the U. S. Life-saving Crew at Evanston. (Note the prominent latissimus dorsi muscles x and x.) The tracings of the deep chest is of an individual of sedentary habits.

METHODS.

The data consists of observations made on 119 individuals (male), students of medicine in the medical department of Northwestern University.

Observations.—The observations consist of:

1. Thoracic diameters.

a Dorso-ventral during inspiration and expiration.

b Transverse during inspiration and expiration.

2. Contour areas (chest pantograms) taken at the end of inspiration and expiration.

3. Contour index determined by the formula of

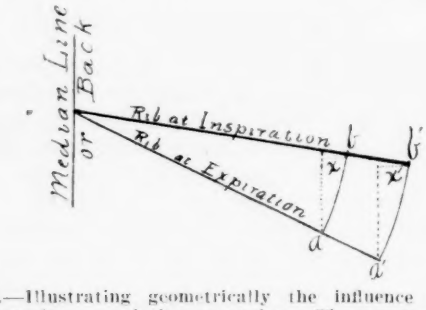

Fig. 3.—Illustrating geometrically the influence of increased linear dimension on relative expansion. The greater the breadth or depth the greater the expansion in the dimension in question on inspiration.

Hutchinson: dorso-ventral diameter divided by the transverse diameter.

4. Lung capacity.

The Apparatus.—The diameters were taken with a pair of calipers (pelvimeters), a description of which is unnecessary. The lung capacity was obtained by means of the wet spirometer.

The contour-areas or cross-sections were taken by means of the chest pantograph of Hall[6] (Fig. 1). This instrument consists of a modified artist's pantograph: the modification consisting of a semicircular brass rod attached to the distal angle (x) of the rectangle of the pantograph for the purpose of encircling the body; the brass rod being so attached at x as to permit of its rotating through an arc of 180 degrees, and so permits a tracing of the opposite side of the body.

The apparatus is attached to a table fitted at one side with a back-rest at right angles to the edge of the table. The patient, being stripped to the waist, is then seated beside the table on an adjustable stool, with his back squarely against the back-rest, and the tracing-point (T) of the brass rod then placed against the side away from the table. The subject having been told to

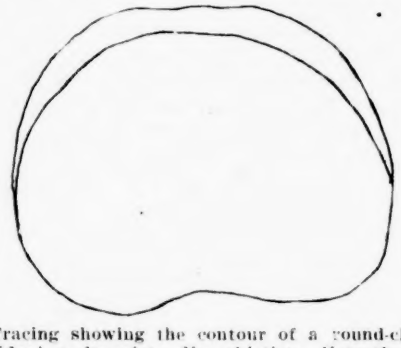

Fig. 4.—Tracing showing the contour of a round-chested (high index) individual, a druggist. No athletics. Note the evenness of the contour.

rigidly maintain his position, is instructed to exhale. The tracing-point is then swept rapidly but accurately across the back to the opposite side, then turned through an angle of 180 degrees, and swept along the front of the chest until the point from which the tracing was started is reached. A sheet of cross-section paper having been placed under the recording point (r) of the pantograph, this gives a tracing of the thorax in expiration. If a tracing of the thorax in inspiration is desired, the patient is instructed to inhale to his full capacity, and the tracing-point is again swept back to the opposite side, i. e., the one against the table. Since the patient is against the back-rest all the time, it is not necessary to retrace the contour of the back. The cross-

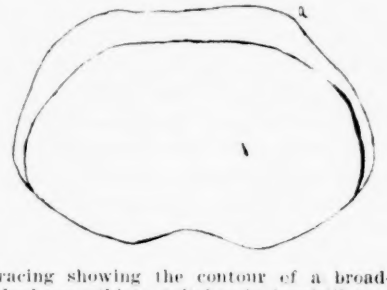

Fig. 5.—Tracing showing the contour of a broad-chested (low index) individual, an athlete (pitcher in baseball team). Note the prominence of the right pectoral muscle (a).

section or ordinate paper used was ruled in 2 mm. squares, and the pantograph was so arranged that the figure was reduced to one-fifth the original size, so that one square =1 sq. cm.

This gives one a tracing which is of a convenient size for use and for filing. It seems pertinent to the subject to call attention to the fact that one acquires at a single observation the following data: 1, The accurate configuration of the thorax at any desired level; 2, the area at expiration and inspiration; 3, area expansion i. e., the difference between area of inspiration and expiration; 4, diameters, both dorso-ventral and transverse; 5, diameter expansion for both dorso-ventral and

6. Hall, W. S.: The Chest Pantograph, THE JOURNAL A. M. A., Feb. 28, 1903, vol. xv, p. 567, and The Evaluation of Anthropometric Data, THE JOURNAL A. M. A., vol. xxxvii, Dec. 21, 1901.

transverse; 6, countour index or the ratio between the dorso-ventral and the transverse diameter.

THE EVALUATION OF THE DATA.

Instead of using the method of averages for evaluating measurements, the median value was obtained by the Hall-Quetelet[7] method, the median value being "that value which is so located in the whole series of observations of a single measurement of any group, that there are as many below it as above it, i. e., that the number of values which it exceeds is equal to the number of values which exceed it."

TABLE 1. CLASS 1. SMALL CHESTS.

No. of Individual.	Height, Standing.	Height, Sitting.	Dorsoventral Diameter at Expiration.	Dorsoventral Diameter at Inspiration.	Dorsoventral Expansion.	Transverse Diameter at Expiration.	Transverse Diameter at Inspiration.	Transverse Expan.	Lung Capacity.	Contour Area at Expiration.	Contour Area at Inspiration.	Contour Expansion.	Thoracic Index.
1....	181	92.5	17	20.5	3.5	27	31	4	3460	630	714	114	.661
2....	173.5	90.5	16	20	4	27.5	30	2.5	3700	565	680	115	.666
3....	174	91.7	14	19	5	22.5	27	4.5	2500	470	545	75	.703
4....	173	90	17	19.5	2.5	27	29.5	2.5	3700	655	735	80	.661
5....	178.8	93.3	17	21.7	4.7	27	30	3	3770	509	633	124	.723
6....	....	91	16.5	19.5	3	26	28	2	3000	495	595	100	.696
7....	177.2	93.2	15.1	18.5	3.4	28	31	3	3860	495	560	65	.596
8....	175	92	17	21	4	26	29	3	4200	550	645	95	.724
9....	172.3	85	16.5	19.5	3	24.5	27	2.5	2980	525	605	80	.722
10....	171	90	15	21	6	28	31	3	4000	565	720	155	.677
11....	168.5	90	16	18.5	2.5	23.5	25.5	2	3400	515	595	80	.725
12....	173	92	16.5	20	3.5	25	28	3	3500	500	585	85	.714
13....	176	93.5	15.5	19	3.5	24	28	4	3200	500	575	75	.678
14....	175.5	94.5	16	19.5	3.5	26	27.5	1.5	3400	430	555	125	.709
15....	175	90	17	22.5	5.5	27	31	4	3400	595	710	115	.725
16....	167	90	17	19	2	21.5	26.5	5	3600	485	600	115	.717
17....	169	86.5	15.5	18.5	3	26.5	28.5	2	2800	440	525	85	.652
18....	170.4	87.5	16.5	20	3.5	25.7	28	2.3	3560	490	610	120	.714
19....	171	86.6	15	18	3	25	27	2	2750	455	560	105	.666
20....	172	89	15	18	3	25	27	2	3170	460	590	130	.666
21....	182	93	17	21.3	4.3	26.5	30	3.5	4170	590	695	105	.725
22....	180	93	16	20	4	25.5	28	2.5	3950	510	600	90	.714
23....	179.5	90.5	17	21	4	27.5	29.5	2	3560	450	560	110	.711
24....	175	92	14	19	5	26	28	2	2490	510	610	100	.678
25....	167	86	14	19.5	4.5	25.5	28.5	3	2950	425	580	155	.684
1....	186.7	96.5	17	21	4	24	27	3	4280	575	670	95	.777
2....	170	89	16.5	20.5	4	24	26.5	2.5	3300	455	530	75	.773
3....	160	84.5	14.5	19	4.5	23.5	26	2.5	3000	455	535	80	.730
4....	189	96	15.5	22	6.5	25.6	27	1.4	2680	525	630	105	.811
5....	161	84	15.5	20	4.5	25	26	1	3230	345	415	65	.769
6....	168.5	90	16.5	21	5.5	25	27	2	3750	455	520	65	.777
7....	181	87.5	16	21	5	23	27	4	3100	430	520	90	.777
8....	170	88	17	21.5	4.5	23.5	28	4.5	3350	525	630	105	.767
9....	171.5	90	17	20.5	3.5	24	27	3	3400	445	550	105	.759
10....	181	91	16.5	22	5.5	25.5	30	4.5	3970	540	680	140	.733
11....	172.5	90	16.5	21	4.5	24	27.8	3.8	3300	515	600	85	.755
12....	182.5	92	17	22	5	26.5	28.5	2	3900	460	565	105	.772
13....	170	91.6	14.5	19.5	5	23.5	26	2.5	2630	380	510	130	.730
14....	167	86.8	16	19.5	3.5	25	26.5	1.5	3200	510	620	110	.736
15....	169	89.1	17	20	3	21.5	24	2.5	2500	435	550	115	.833
16....	170	88	17	21.5	4.5	24.5	26.5	2	3100	490	625	135	.811
17....	184	93	17	23	6	26.5	28.5	2	3700	600	735	135	.807
18....	179	91	16	21	5	24	27	3	4300	425	515	90	.777
19....	172.2	93	17	20.5	3.5	26	28.5	2.5	4000	520	635	115	.788
20....	172	89.5	16	20	4	24.5	26	1.5	2800	450	530	80	.769
21....	181.6	93.5	17	22.5	5.5	24.5	27.5	3	3940	565	700	135	.818
22....	172.4	91	15	20.5	5.5	24	26	2	3600	480	620	140	.788
23....	183	92.5	16.8	20.5	3.8	24	26.5	2.5	3150	465	555	90	.773
24....	175	94.5	17	20.5	3.5	24.7	28	3.3	3490	560	690	130	.731
25....	179	91	15.5	21	5.5	25	27.5	2.5	2800	490	595	105	.763
26....	167	85	16	20.5	4.5	25.5	28.5	3	3200	555	635	80	.732
27....	155	81	16.5	20	3.5	22.5	24.5	2	2930	460	520	60	.814

The data was first transferred to cards, each card giving all the measurements of an individual. Then to determine the median value of any measurement the two extremes are found. Thus, for example, it is found that the height of 116 individuals varies between 152 cm. and 192 cm. This gives a difference of 40 cm. between the shortest and the tallest individual of the series.

Dividing the series into ten groups, with a difference of 4 cm., we find the following:

152–156	156–160	160–164	164–168	168–172	172–176	176–180	180–184	184–188	188–192
1	2	6	16	35	23	16	14	2	1

7. Quetelet: Anthropometric ou mésure dés different facultés de l'homme, Bruxelles, 1870.

Since there are 116 measurements in the series, it is necessary only to determine the fifty-eighth measurement to obtain the median value.[8] This is obtained by the formula:

$$M = a + d\frac{(\frac{n-1}{2} - l)}{m}$$

M = Median value.
a = minimum value of median group (the group containing the median value).
d = difference between groups.
n = total number of observations.
l = sum of observations below the median group.
m = number of observations in the median group.
Substituting

$$M = 168 + 4\left(\frac{(116-25)}{2} - 35\right) = 170.6$$

TABLE 2. CLASS 2. MEDIUM-SIZED CHESTS.

No. of Individual.	Height, Standing.	Height, Sitting.	Dorsoventral Diameter at Expiration.	Dorsoventral Diameter at Inspiration.	Dorsoventral Expansion.	Transverse Diameter at Expiration.	Transverse Diameter at Inspiration.	Transverse Expansion.	Lung Capacity.	Contour Area at Expiration.	Contour Area at Inspiration.	Contour Expansion.	Thoracic Index.
1....	171	87.5	17.5	20	2.5	29	32	3	4500	615	780	165	.625
2....	175	93.5	18	22	4	28.5	31	2.5	4350	610	705	95	.705
3....	156	92.5	18	20.5	2.5	26.5	30	3.5	3600	505	640	135	.683
4....	170	87.5	18	20.5	2.5	26	30	4	3400	625	735	110	.683
5....	178	92	18	22	4	26.6	31	3.4	3950	510	625	115	.709
6....	175.5	93	18	20.5	2.5	26.5	29	2.5	3650	495	620	125	.707
7....	180.4	94.4	18.5	21.5	3	28	30.2	2.2	3700	600	695	95	.712
8....	170.5	87.5	17.3	21	3.7	26	29	3	3700	500	670	170	.724
9....	171	90.5	19	24	5	27	33.5	6.5	4000	610	755	145	.716
10....	172.5	88.5	18	21.5	3.5	28	32	4	3600	505	595	90	.671
11....	173.5	93.5	17.8	20.5	2.7	25.5	31	5.5	3450	510	610	100	.661
12....	170	88.7	19	21	2	28	29.5	1.5	3450	545	660	115	.711
13....	181	92	19	23	4	30	33	3	3800	640	745	105	.697
14....	172.5	89.7	18	20.5	2.5	25	28.5	3.5	3250	430	550	120	.719
15....	167	86	18	20.5	2.5	27	29	2	3700	455	660	105	.707
16....	175	90	18.5	20	1.5	26	28	2	3200	490	575	85	.714
1....	180	91.2	18	21.5	3.5	27	29.7	2.7	3800	606	680	74	.728
2....	170	87	17.7	19	1.3	26	28.2	2.2	3920	495	655	160	.730
3....	181.5	94.8	18.5	21.5	3	26	28.5	2.5	4350	610	690	80	.754
4....	170	89	19	22	3	26.7	28.5	1.8	3600	563	672	110	.772
5....	166	86.5	17.5	21	3.5	25	28	3	3060	515	630	75	.750
6....	172	92	18.5	21.5	3	26	28	2	3600	640	730	90	.760
7....	172.5	90	19	22	3	24	25.5	1.5	2700	445	500	65	.862
8....	185	95.8	17.5	21	3.5	25.7	28	2.3	3000	420	535	115	.750
9....	162	83	17.5	20.5	3	24	27.5	3.5	2650	460	545	85	.745
10....	171	89	18	24	6	26	28	2	3450	625	705	80	.857
11....	162.5	89.5	18	22.7	4.7	26.5	28	1.5	2800	545	665	120	.812
12....	176.5	90	17.6	22.7	5.1	24.3	27.6	3.3	3200	400	525	125	.822
13....	....	93.5	19.0	22.5	3.5	27	31	4	3200	540	690	150	.728
14....	166.5	90	17.5	21	3.5	24	27.5	3.5	2700	560	655	95	.763
15....	180	92.8	17.3	24.8	6.5	27.3	29.3	2	4250	525	685	160	.813
16....	165	86	19	24	5	28	30	2	2800	430	555	125	.800
17....	168	91	17.5	20.5	3	22	25.5	3.5	3400	515	585	70	.804
18....	176	91.8	17.5	21.5	4	22.5	27	4.5	2630	515	605	90	.770
19....	174	91	19	22.5	3.5	27	29	2	3500	620	715	95	.775
20....	178	92	19	22	3	27	30	3	4280	640	720	80	.733
21....	168	88.2	18	20	2	25	27	2	3400	540	635	95	.740
22....	172.5	90	17.5	21	3.5	24.5	27	2.5	2900	475	560	85	.777
23....	167	91.5	18	22	4	24.5	30	5.5	3980	430	525	95	.733
24....	168.4	90.2	17.5	21	3.5	24	27	3	3780	585	645	80	.777
25....	163	85	18.5	25	6.5	27	30	3	3700	560	650	90	.833
26....	170.5	88	18.5	22.5	4	26.5	29	2.5	4200	620	705	85	.775
27....	178.5	90	17.8	22	4.2	25.3	29	3.7	3500	550	635	85	.758
28....	175	91	18.5	22	3.5	27	28.5	1.5	3800	515	635	120	.772
29....	172.5	90	18.7	23.5	4.8	27	30	3	3960	550	690	140	.783
30....	174	93.7	18.5	23	4.5	27	30.5	3.5	3300	480	625	145	.754
31....	180.4	94.5	17.5	20.5	3	25	27.5	2.5	4140	515	590	75	.745
32....	166	88.5	17.5	20.5	3	24.5	27	2.5	3290	495	585	90	.759
33....	181	93	19	22.5	3.5	27.5	30	2.5	2750	547	647	100	.750
34....	177	94.5	19	25	6	25	29	4	5200	610	730	120	.862

In arranging the cards, they were first divided into three classes according to size; that is, according to the length of anteroposterior diameter. Those having a diameter falling between 14 and 17 with a median value of 16.863 cm., were called small-chested (Class 1). Those whose dorso-ventral diameter fell between 17 and 19 (median value 18,143) were called medium-sized (Class 2), while those whose anteroposterior diameter was over 19 (median value 19.454), were called large chests (Class 3).

This in further calculation throws out of considera-

8. For a full discussion of the subject of median values the reader is referred to an article by W. S. Hall in THE JOURNAL A. M. A., vol. xxxvii, Dec. 21, 1901.

tion the element of size which must be eliminated before area and capacity may be compared with contour.

TABLE 3. CLASS 3. LARGE CHESTS.

No. of Individual.	Height, Standing.	Height, Sitting.	Dorsoventral Diameter at Expiration.	Dorsoventral Diameter at Inspiration.	Dorsoventral Expansion.	Transverse Diameter at Expiration.	Transverse Diameter at Inspiration.	Transverse Expansion.	Lung Capacity.	Contour Area at Expiration.	Contour Area at Inspiration.	Contour Expansion.	Thoracic Index.
1....	170	....	19.5	22.8	3.3	25.8	28.5	2.7	3400	475	589	114	.705
2....	175	....	20	25	5	30	33	3	5400	628	798	170	.757
3....	171.2	....	21	23	2	29.5	30.5	1	4000	642	715	73	.754
4....	178	95	21.5	25	3.5	28	33	5	4150	700	876	176	.757
5....	177.3	88	22.5	24.5	2	31.3	34.5	3.2	4100	720	838	113	.710
6....	174.5	92.7	20	23.8	3.8	27	31.5	4.5	3800	715	884	169	.755
7....	167	89	20	22.5	2.5	31	34	3	4000	800	916	116	.662
1....	175	....	20	25	5	23	27.5	4.5	4800	639	816	177	.909
2....	172.5	....	19.5	24	4.5	26	29.5	3.5	4600	663	815	152	.813
3....	170.3	....	23.5	26	2.5	32.5	34	1.5	3300	540	628	88	.765
4....	166.8	....	20	23	3	24.7	26.5	1.8	3700	610	699	89	.868
5....	163.6	....	20.7	24	3.3	28.8	31.4	2.6	3800	672	794	122	.764
6....	172.5	89	21	22.5	1.5	27.5	29.5	2	2600	670	745	75	.762
7....	180.5	94	24	28	4	31	33.5	2.5	3940	605	751	146	.834
8....	180	96	20	27	7	27	34	7	3500	595	798	203	.794
9....	165	87.2	19.8	21.5	2.7	26.8	28	1.2	3200	600	676	76	.762
10....	177	90.5	20	23	3	25.5	28.5	3	3350	515	623	113	.807

Each class was then subdivided into broad and deep chested by means of the contour indices, i. e., those chests in Class 1 whose index fell between 0.596 and 0.725 (median value 690) were called broad, while those whose index fell between 0.730 and 0.833 (median value 0.773) were called deep. The same divisions being made for classes 2 and 3, it was found that the median index of the broad chests of Class 2 was 0.698, while that of the deep chest was 0.783. A similar subdivision of Class 3 showed the median index of the broad chest to be 0.728, while that of the deep chest is 0.808.

TABLE 4.—THE RELATION OF CHEST CONTOUR TO LUNG CAPACITY.

OBSERVATIONS.	Class 1. Small Chests.		Class 2. Medium Chests.		Class 3. Large Chests.	
	Broad.	Deep.	Broad.	Deep.	Broad.	Deep.
Coutour index = $\frac{\text{D. V. Insp.}}{\text{Trs. Insp.}}$	.690	.773	.698	.783	.728	.808
Contour area at expiration	501 sq. cm.	479 sq. cm.	540 sq. cm.	535 sq. cm.	669 sq. cm.	611 sq. cm.
Contour area at inspiration	612 sq. cm.	587 sq. cm.	658 sq. cm.	646 sq. cm.	802 sq. cm.	734 sq. cm.
Contour expansion	111 sq. cm.	108 sq. cm.	118 sq. cm.	111 sq. cm.	133 sq. cm.	123 sq. cm.
Dorsoventral diameter at expiration	16.5 cm.	16.9 cm.	18.0 cm.	18.4 cm.	20.6 cm.	20.9 cm.
Dorsoventral diameter at inspiration	19.9 cm.	20.9 cm.	21.3 cm.	22.4 cm.	23.8 cm.	24.4 cm.
Dorsoventral expansion	3.4 cm.	4.0 cm.	3.3 cm.	4.0 cm.	3.2 cm.	3.5 cm.
Transverse diameter at expiration	26.3 cm.	25.0 cm.	27.5 cm.	26.5 cm.	28.9 cm.	27.3 cm.
Transverse diameter at inspiration	28.8 cm.	27.0 cm.	30.5 cm.	28.6 cm.	32.1 cm.	30.3 cm.
Transverse expansion	2.5 cm.	2.0 cm.	3.0 cm.	2.1 cm.	3.2 cm.	3.0 cm.
Lung capacity	3445 cu. cm.	3366 cu. cm.	3700 cu. cm.	3450 cu. cm.	4121 cu. cm.	3679 cu. cm.

CONCLUSIONS.

A study of the results tabulated above shows the following:

1. For chests of the same size, those having low indices, i. e., broad chests, have a greater contour-area (cross-sectional area) both in expiration and inspiration, than do the deep chests. A glance at the superimposed tracings (Fig. 2) makes this plain. If the area of the deep chest be represented by (*a*) the area of the broad chest must be represented by a+b+b′, i. e., the areas at the sides.

2. Of still more importance, however, is the fact that the broad chests have an area expansion greater than that of the deep chests. That the increase is small is true, but the uniformity with which the broad chest shows the greater area of expansion shows beyond question that the rule is a general one.

3. For the broad chests the greater expansion is in the transverse diameter, while the deep chests have their larger expansion in the dorso-ventral diameter. This is contrary to the statement of Hutchinson that the greater expansion of the broad or "bellows" type of chest is in the anteroposterior diameter.

Inasmuch as the ribs move upward and outward and upward and forward during inspiration, it is readily seen that every centimeter added to either diameter increases its capacity for expansion. Thus in Figure 3: if the point a is elevated to the point b, it must pass outward a distance of x, but the point a′ in being raised to the point b′ must pass outward a distance of x′, necessarily greater than x, by construction.

4. Since lung capacity is a measure of volume expansion, it should follow that if the broad chests have a greater contour area and contour expansion, they should have a greater capacity. The figures of the table prove beyond a doubt that the broad chests have a greater capacity, not for one size only, but for all sizes.

That lung capacity (volume expansion) is the real criterion of resistance to tuberculosis has only a negative proof (persons with deficient expansion being more prone to develop tuberculosis) is conceded; yet one can not but feel justified in concluding that the person with a broad chest, with its uniformly attendant increased capacity, has the better chance of resisting the inroads of tuberculosis. With this fact in view, one can not but add his plea to that of Hutchinson, for some means to develop the thorax in the transverse diameter.

SUMMARY.

1. By means of the contour index chests may be divided into broad and deep, having low or high indices, respectively.

2. For broad chests the greater expansion is in the transverse diameter.

3. For deep chests the greater expansion is in the dorso-ventral diameter.

4. Broad chests have a greater cross-sectional area, both for inspiration and expiration, than deep chests.

5. Broad chests have a greater area expansion than deep chests.

6. Broad chests have a greater capacity (volume expansion) than do deep chests.

7. Broad chests having uniformly a greater capacity would seem to offer greater resistance to tuberculosis.

Chilblains a Tuberculous Affection.—A Danish physician, G. E. Permin, publishes a communication in the *Ztft. f. Tuberkulose*, v. No. 5, arguing that erythema pernio, the common chilblain, is probably a tuberculous exanthem. The action of cold enlarges the vessels, and this affords the toxins the opportunity to get in their work. The stage of the pulmonary affection has no influence on the development of the complication.

MATHEMATICAL RELATIONS OF CERTAIN CHEST MEASUREMENTS.*

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During a recent investigation of "The Relation of Chest Contours to Lung Capacity," made by Dr. F. F. Malone,[1] in the physiologic laboratory of the Northwestern University Medical School, it occurred to me, first, that there should be a method of computing area expansion from the diameters; and second, that there should be a method of computing lung capacity from area expansion and thoracic length.

The chest contours were traced through the help of the chest pantograph, which I devised.[2] One of these contours is shown in Figure 1. The one chosen for this figure happens to represent a chest of unusually high index, i. e., an unusually deep chest. The inner line shows the contour of the chest at the end of the forced expiration, while the outer line gives the contour at the end of the forced inspiration.

The cross-sectional area or contour area of the chest at inspiration or at expiration may be easily determined by inspection. Each of the large squares represents 25 square centimeters, each of the small squares 1 square centimeter. The area expansion is the difference in area between the contour of expiration and that of inspiration. Extended observation has shown that the area expansion bears a very close relation to the lung capacity, as set forth by Malone.[1] Furthermore, that it is the most important measurement that can be made on the thorax, inasmuch as it is an index of lung capacity and of extent of mobility and of the symmetry of expansion.

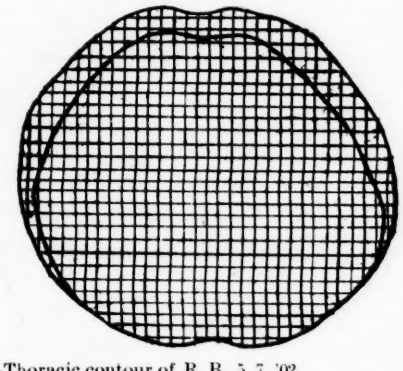

Fig. 1.—Thoracic contour of R. B., 5, 7, '02.
Dorsoventral diameter, at expiration, D = 24.3.
Dorsoventral expansion, e = 2.3.
Transverse diameter, at expiration, T = 28.5.
Transverse expansion, e′ = 2.5.
Contour index, $I = \frac{D}{T} = .853$.
Mid-diameter, $\frac{D+T}{2} = 26.4$.
Radial expansion, $\propto = \frac{e+e'}{4} = 1.2$.
Area expansion, $E = \pi \propto \left(\frac{D+T}{2} + \propto\right) = 104.4$.
Length of thorax, L = 30.2.
Lung capacity, C = L × E = 3153 c.c.
Lung capacity, as measured, = 3100 c.c.

There are only a few appliances with which the area expansion can be directly determined, and most of these, as in the case with the chest pantograph, while simple in construction and not very bulky, require a considerable amount of practice to acquire the accuracy necessary in such observations and are better adapted for use in laboratories and large dispensary and hospital clinics than in the private office of the practitioner.

It can hardly be questioned that the contour expansion or area expansion and the lung capacity are, next to the condition of lung tissue, the most vital points to be determined in an examination of the chest. But both of these determinations require apparatus not always convenient for the general practitioner to have in his private office.

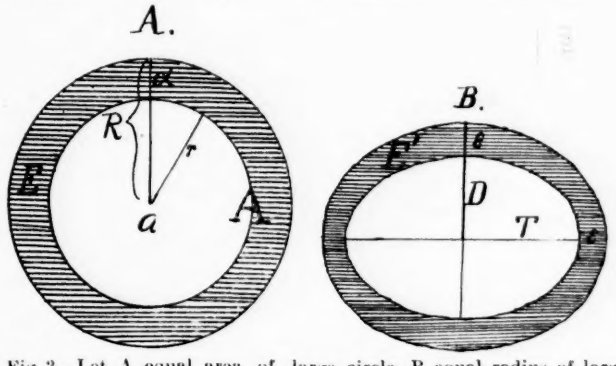

Fig. 2.—Let A equal area of large circle, R equal radius of large circle, a equal area of small circle, r equal radius of small circle, E equal area of shaded ring: (E = A − a), $\propto$ equal the difference of radii: ($\propto$ = R − r). To find the area of the ring (expansion) in terms of $\propto$ and r:

(1) . . . $A = \pi R^2$
(2) . . . $a = \pi r^2$
(3) . . . but $R = r + \propto$
(4) . . . $\therefore A = \pi (r + \propto)^2 = \pi (r^2 + 2r \propto + \propto^2) = \pi r^2 + 2\pi r \propto + \pi \propto^2$
(5) . . . but $E = A - a$
(6) . . . $\therefore E = \pi r^2 + 2\pi r \propto + \pi \propto^2 - \pi r^2 = 2\pi r \propto + \pi \propto^2$
(7) . . . $\therefore E = \pi \propto (2r + \propto)$

In the elliptical figure (B) a very close approximation to the area can be obtained by using half the average of the two axes (D and T) in place of the radius (r). The mid-diameter equals the average of the axes, $\left(\frac{D+T}{2}\right)$; and the mid-radius equals half the mid-diameter, or $\frac{D+T}{4}$. Substituting this mid-radius for the radius (r) in equation (7) we obtain the simple formula:

(8) . . . $E' = \pi \propto \left(2\frac{D+T}{4} + \propto\right) = \pi \propto \left(\frac{D+T}{2} + \propto\right)$.

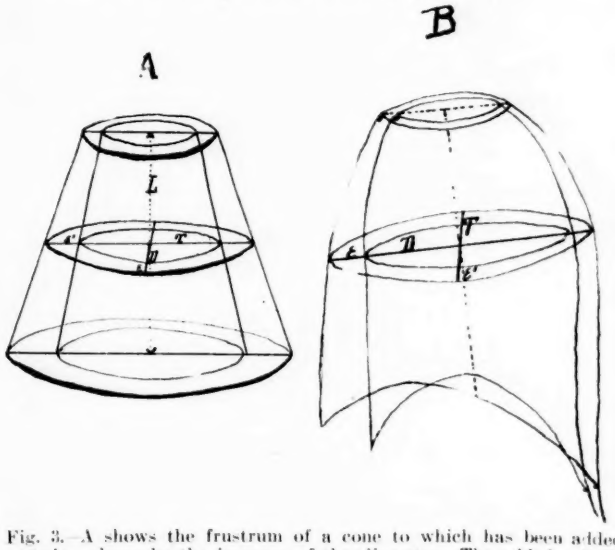

Fig. 3.—A shows the frustrum of a cone to which has been added a certain volume by the increase of the diameter. The added volume is equal to the average area of expansion, taken at the mid-height, multiplied by the altitude, or length. But the average area expansion, $E = \pi \propto \left(\frac{D+T}{2} + \propto\right)$, and the altitude equals L.

Fig. 3.—B. The similarity of the mathematical conditions of the chest to those of the geometric figure just described is apparent in the figures. The area expansion at the nipple plane approximates the average area expansion, whose determination one can easily make. The length, L, may be established by experiment. Note that the act of inspiration adds something to the length as well as to the lateral dimensions.

* Read at the Fifty-fifth Annual Session of the American Medical Association, in the Section on Pathology and Physiology, and approved for publication by the Executive Committee: Drs. V. C. Vaughan, Frank B. Wynn and Joseph McFarland.

1. Malone: The Relation of Chest Contours to Lung Capacity. See preceding article, page 783.

2. Hall: The Chest Pantograph, THE JOURNAL A. M. A., Feb. 28, 1903, vol. xv, p. 567.

It is my object to set forth briefly an accurate and simple method of determining both area expansion and lung capacity with the help of steel calipers or of the obstetrician's pelvimeter.

TO DETERMINE THE AREA EXPANSION.

Note that in Figure 1 the area expansion is distributed around the front and sides of the chest. This is due to the fact that in the use of the chest pantograph the back of the subject rests against a fixed support. This naturally throws all of the expansion of the dorso-ventral forward. If the tracing has been made in such a way as to distribute the expansion evenly all around the contour of expiration, it would have been quite as accurate and would have given the same area expansion, but the latter would have appeared as a complete ring rather than as a crescent.

Let us compute the area of a ring between two concentric circles of unequal radii. Figure 2A shows two such circles. The expansion area represented by the shaded ring E equals the difference in area of the two circles (E=A—a), which we see from the mathematical reasoning (see description of figure) equals the product of three quantities very easily measured. (**E=π** times α times $(2r+\alpha)$.

The contour of the chest, however, approaches an ellipse rather than a circle in its outline. Let us adapt the method to the ellipse. This adaptation, given under Figure 2B, shows that the area expansion between the ellipses is equal, within a very close approximation, to the product of three quantities, which, in turn, are determined by making three simple measurements, namely: 1, the dorsoventral diameter, D; 2, the transverse diameter, T, and third, the average radial expansion, α.

The formula: $\mathbf{E=\pi\alpha\left(\frac{D+T}{2}+\alpha\right)}$.

Let us apply this simple formula to actual measurements of the human chest, and thus put it to a practical test. The accompanying tables give the results from the chest measurements of 119 normal men, classified as to size into three classes, each class being subdivided into broad-chested and deep-chested groups on the basis of the contour index. The contour index is obtained by dividing the dorsoventral diameter at expiration by the transverse diameter at expiration, according to the formula of Hutchinson.[3] The broad chests, therefore, have lower indices than the deep chests. The values given in each column represent the median values rather than the averages. The advantages of the median value over the average are set forth in my paper on the "Evaluation of Anthropometric Data."[4]

Applying the formula to the value in the first column, one must first determine the value of α. This being the average radial, expansion is obtained by taking one-half the average expansion of the two diameters, or one-fourth the sum: $\alpha=\frac{e+e'}{4}$.

Therefore the radial expansion, $\alpha=\frac{3.4+2.5}{4}=1.475$.

The mid-diameter, $\frac{D+T}{2}=\frac{16.5+26.3}{2}=21.4$. The area expansion may be very easily obtained from these values: E = 3.1416 × 1.475 × 22.875 = 106 sq. cm. One may simplify the multiplications without appreciably modifying the results by using approximate factors: E = 3 1/7 × 1.48 × 22.88 = 106.5 sq. cm., which differs from the first result by only .5 sq. cm.—far within the necessary error of observation.

Note that the area expansion as given in the table, E, is 111 sq. cm. This was determined graphically by the chest pantograph, and the error of observation has a range of not less than 10 sq. cm., so that the area expansion, as determined by the method above described, is quite as reliable as that determined by the pantograph.

MATHEMATICAL RELATIONS OF CERTAIN CHEST MEASUREMENTS.

OBSERVATIONS.	Class 1. Small Chests.		Class 2. Medium Chests.		Class 3. Large Chests.		Average.
	Broad.	Deep.	Broad.	Deep.	Broad.	Deep.	
Contour index $\frac{D}{T}$ =	.690	.773	.698	.783	.728	.808	
Contour area, at expiration	501 sq. cm.	479 sq. cm.	540 sq. cm.	525 sq. cm.	669 sq. cm.	611 sq. cm.	
Contour expansion in area (E)	111 " "	108 " "	118 " "	111 " "	133 " "	123 " "	117.3
Dorsoventral diameter, expiration (D)	16.5 cm.	16.9 cm.	18.0 cm.	18.4 cm.	20.6 cm.	20.9 cm.	18.55
Dorsoventral expansion (E)	3.4 "	4.0 "	3.3 "	4.0 "	3.2 "	3.5 "	3.566
Transverse diameter, expiration (T)	26.3 "	25.0 "	27.5 "	26.5 "	28.9 "	27.3 "	26.91
Transverse expansion (E)	2.5 "	2.0 "	3.0 "	2.1 "	3.2 "	3.0 "	2.633
Lung capacity (C)	3445 c.c.	3396 c.c.	3700 c.c.	3450 c.c.	4121 c.c.	3679 c.c.	3627
Radial expansion, $\alpha=\left(\frac{e+e'}{4}\right)$	1.475 cm.	1.500 cm.	1.575 cm.	1.525 cm.	1.600 cm.	1.625 cm.	Brd. 1.55 / Deep 1.55
Mid-diameter $=\frac{D+T}{2}$	21. "	20.95 "	22.75 "	22.45 "	24.75 "	24.10 "	22.73
Area expansion, $e=\pi\alpha\left(\frac{D+T}{2}+a\right)$	106.5 sq. cm.	105.5 sq. cm.	121.0 sq. cm.	115.0 sq. cm.	132.5 sq. cm.	131.5 sq. cm.	118.2
Thoracic length index $=\frac{C}{e}=\frac{C}{e'}$	32.3 / 31.0 = 31.65	31.9 / 31.1 = 31.5	30.6 / 31.3 = 30.95	30.0 / 31.0 = 30.5	31.0 / 30.9 = 30.95	28.0 / 29.9 = 28.95	30.7
Length of thorax	32.8	32.4	32.3	32.0	32.5	31.4	32.3
Height sitting	91.0	90.8	90.3	90.9	91.0	89.4	90.52

It may be interesting to note in this connection that the average area expansion as determined by the pantograph—117.3—differs from the average—118.2—as determined by the calipers and the formula by only .9 sq. cm., a very close approximation on 119 individuals. (See column of averages.)

To apply the formula to the individual case one may take the measurements as given in Figure 1. The mid-diameter equals 26.4, the radial expansion 1.2, the area expansion equals 3.1416×1.2×27.6=104 sq. cm. An inspection of the figure shows the area expansion is more than 100 and less than 110. The determination by calipers is quite as accurate as that by the graphic pantograph method.

TO DETERMINE THE LUNG CAPACITY.

The usual method to find the lung capacity is to direct the subject to fill the lungs to the maximum, then exhale as much as possible, forcing the air into the spirometer, where it is measured. During the act the thoracic wall changes from the position of forced inspiration to that of forced expiration, thus decreased in cross-sectional area to the extent of the area expansion.

3. Hutchinson: Some Deformities of the Chest in the Light of Ancestry and Growth, THE JOURNAL A. M. A., Sept. 11, 1897, vol. xxix, p. 512.

4. Hall: The Evaluation of Anthropometric Data. THE JOURNAL A. M. A., Dec. 21, 1901, vol. xxxvii.

A study of Figure 3 will make it evident that lung capacity, C, is equal to the increased volume of the chest in inspiration, i. e., to area expansion, E, times length ($C=E\times L$).

One can measure the distance between any two landmarks accessible on the surface of the thorax, but, having measured it, he is unable to affirm that it is equal to the average length. The difficulty of locating landmarks which may be accepted as the limit of chest length led me to the use of an indirect method which, it is hoped, will lead to satisfactory results.

The final object is to find lung capacity without the use of the spirometer. The laboratory, however, is supplied with a very accurate water spirometer. Lung capacity is not, then, an unknown quantity. It is chest length that is the unknown quantity in the simple equation: $C = E \times L$. Then $L = \frac{C}{E}$.

Let us call L the thoracic length index, and apply the formula to the values in the table. The table gives two values for area expansions—E, found by the graphic method with the pantograph; E, found by the mathematic method with the calipers. Inasmuch as both of these are subject to a certain range of error, and we have no means of knowing which is the more accurate, we will arrive at more reliable results by using both values in turn to determine the thoracic length index, and finally adopting the average.

In the first column this average length index is 31.65 cm. Note from the table that the values vary within a very narrow range, and that the average for the 119 men is 30.7 cm.

At the time the data was collected (1902) the thought of taking thoracic length had not occurred to me. The height sitting was taken, however, and is shown in the table. The average for the 119 men is 90.52 cm. In order to get an idea of the length of the thorax of these men, the height sitting and thoracic length was measured in nine men taken at random. The thoracic length was measured from the middle of the clavicle downward along the ventral wall of the thorax to the middle of the tenth rib, where it joins its costal cartilage. In the nine men thus measured the thoracic length was 35.7 per cent. of the height sitting. Taking this per cent. of the height sitting for the thoracic length (calculated), it gives us the values recorded in the table.

This calculated thoracic length serves the purpose of showing that there is a definite relation between the thoracic length index and the measured thoracic length.

The average thoracic length index for 119 men is 30.7 cm. The average thoracic length (calculated) is 32.3 cm. These averages differ by 1.6 cm. If the thoracic length were taken from the lower surface of the clavicle to the upper edge of the tenth rib at the junction with its cartilage, the resulting thoracic length would approximate the thoracic length index within a few millimeters in every case.

It must be evident from the above that if one can establish landmarks on the surface of the chest for giving him the thoracic length, he can determine lung capacity by multiplying this factor by the area expansion.

The method for finding this is shown above. As a preliminary step I would suggest the following method:

1. Estimate area expansion as shown above and express it in square centimeters or square inches.

2. Measure the thoracic length from the lower margin of the clavicle at its middle to the upper margin of the tenth rib at its junction with its cartilage, expressing the measurement in centimeters or in inches.

3. Multiply the two values thus obtained, and the product will be the approximate lung capacity in cubic centimeters or cubic inches.

Applying this method to the case of R. B., whose contour is shown in Figure 1, we obtain 3,153 c.c., while his lung capacity as measured by the spirometer was 3,100 c.c. This is a much closer approximation than one would expect usually to find. If one can by this method get within 100 or even 200 cubic centimeters of the lung capacity as measured by the spirometer, the value of the method will be demonstrated, as the lung capacity in general varies beween 2,900 c.c. and 5,500 c.c.

SUMMARY.

1. In the calipers (pelvimeter) one possesses an instrument with which he can determine accurately the area expansion in any cross-section of the chest.

2. To determine the area expansion, E: 1, Measure the dorsoventral and the transverse diameters at expiration and at inspiration: 2, calculate the mid-diameter at expiration ($\frac{D+T}{2}$); 3, calculate the radial expansion during inflation of the lungs ($\alpha=\frac{e+e'}{4}$); 4, multiply together the following three factors: π (3.1416) times the radial expansion times the sum of the mid-diameter and the radial expansion: $E = \pi\times(\frac{D+T}{2}+\alpha)$.

3. The radial expansion for broad chests is not greater than for deep chests, the average for each being 1.55 cm. in the 119 men here discussed.

4. To determine the lung capacity, C: 1, Estimate area expansion, E; 2, measure thoracic length, L (from the lower edge of the clavicle at its middle to the upper edge of the tenth rib at the junction with its cartilage); 3, multiply these two facts together for the approximate lung capacity ($C=E\times L$).

5. The landmarks for thoracic length may have to be modified as a result of subsequent tests.

A CASE OF CORTICAL HEMORRHAGES FOLLOWING SCARLET FEVER.*

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The following case of hemiplegia developed in a boy during convalescence from scarlet fever. The basis of the cerebral symptoms was a markedly hemorrhagic encephalitis focal in the parietal lobes. The reaction is histologically characterized, aside from large areas of hemorrhage and a few superficial or meningeal areas of frank suppuration, by a tremendous proliferation of phagocytes. The phagocytes for the most part contain blood corpuscles and dilate or supplant the pial and adventitial meshes. In places, the phagocytes occupy the space of lost brain substance which has undergone acute fatty degeneration:

CLINICAL HISTORY.

G. N., an American boy of 5 years, was admitted to the

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South Department of the Boston City Hospital, Dec. 13, 1902, with a few hours' history of vomiting and sore throat.

The boy was well developed and nourished and only moderately prostrated. The roof of the mouth was slightly reddened. The tongue was moist, red and coated, and the papillæ at the tip were somewhat enlarged. The throat was congested. The tonsils were large and red. On both tonsils and uvula was some exudation. The heart was slightly irregular in action, and a rough blowing systolic murmur was heard at base and apex, transmitted a short distance into the axilla. The face was flushed, with a pale zone about mouth. The trunk showed a fresh punctate eruption, which was especially marked in axillæ and groins. Other findings were negative or irrelevant.

The diagnosis of scarlatina was made and the patient isolated. The disease proceeded as usual, and convalescence was setting in apparently without interruption when, on Jan. 14, 1903, while the patient was up in clothes, a slight limp was noted in walking.

Once at play the child had a violent contraction of the flexors of the right thigh, which abated after a half minute. Early the next morning there were three more attacks, which were terrifying to the child, but painless. These night attacks were attended by involuntary passages of urine.

January 16 at about 10:30 a. m. was another attack associated with dull pain in the right knee. The attack lasted about five minutes and consisted of regular contractions and relaxations of the flexors of the right leg, at intervals of about ten seconds. A second attack occurred about 2:15 p. m. the same day, in which all the muscles of the right side were affected except those of the face. As the symptoms persisted chloral was given; three minutes later the attack ceased. Afterward it was found that the right arm was paralyzed and the pain and tactile senses were much impaired. There was no loss of consciousness or any further disorder that day.

On January 17, the fourth day of the cortical symptoms, the child was wakened at about 9 a. m. by a violent contraction on the right side of the body, still sparing the face. The contractions were relieved with chloral. At 4:50 p. m. the patient was again aroused from sleep by contractions of the right side, this time involving the face. Chloral was again given, with relief. After subsidence of the attack the whole right side remained paralyzed. The child now took food with difficulty. The sphincters were paralyzed.

The notes of the next ten days follow:

January 18.—Rectal feeding. Sleeps most of time. Dull and apathetic. Pain sense in whole right side completely lost.

January 19.—About 9:30 a. m. he had another attack involving all muscles of right side, including face. Lasted about a minute; unconscious after attack.

January 20.—Apparently unconscious all day. Does not arouse when rectal feedings are given. Sleeps most of the time.

January 21.—Somewhat brighter. Asked for water and played with toys about an hour. Then went to sleep and slept rest of day and all night.

January 22.—About 8:30 a. m., while sleeping, mouth became closed firmly, and child grew cyanotic and almost pulseless. Mouth pried open and color returned. Nose found to be occluded with crusts. Child emaciating. Heart irregular. Lungs and abdomen negative.

January 23.—Unconscious most of time. Emaciation marked. Ptosis on right side. Right corner of mouth droops.

January 26.—Paralysis as before. Pain sense on right side lost, diminished on left. Râles on both sides of the back.

Gradually failed. Râles more numerous. Expelled all feedings. Died January 28, 7:10 a. m.

The temperature, which had fallen to normal January 10, less than a month after admission, became 101 degrees F. the morning of the 14th and remained elevated till the 20th. From the 20th till death the temperature remained normal or was slightly raised.

For the observations here recorded we are indebted to Drs. T. B. Cooley and H. H. Smith, assistant physicians to the South Department of the Boston City Hospital, and to Dr. J. H. McCollom, resident physician to the South Department, we are obliged for kind permission to report the case.

SUMMARY OF CLINICAL FINDINGS.

The case may be summarized as follows: Scarlet fever of moderate severity in a boy of five years. Convalescence interrupted about five weeks after onset of fever by cerebral symptoms, fatal two weeks later (seven weeks after admission). The contractions and sensory symptoms began in the right leg and advanced during four days to affect the whole right side, including the face. The contractions were sharply defined (at one time alternating regularly with relaxations at intervals of about ten seconds) and limited in duration (a few seconds). Paralysis of the affected limbs ensued. During the last week the child was in the main unconscious (masking symptoms on left side).

ANATOMIC FINDINGS.

Fairly well developed, poorly nourished white boy, without rigor. A very few livid spots on back. Scaling on the under surface of toes, on scrotum and under finger nails. Skin in general harsh to the touch and over calves feels almost like goose skin. Pupils equal; not dilated. No edema. Extremities symmetrical. Very little superficial fat of abdomen.

Peritoneal Cavity.—Surfaces smooth and dry. Appendix crook-shaped, retrocecal, points towards spleen, 11 cm. long. Mesenteric lymph nodes distinct.

Pleural Cavity.—Left clear; right shows a few firm adhesions in front. Surfaces normal.

Pericardial Cavity.—Normal.

Heart.—Weight, 100 gms. Measurements: Tricuspid valve, 5.5 cm.; pulmonary valve, 4.5 cm.; mitral valve, 5.5 cm.; aortic valve, 4 cm.; left ventricle, 1 cm.; right ventricle, 2 mm. Slight amount of subpericardial fat. Myocardium firm, red, without fat in teased preparation treated with acetic acid. Endocardium, valves and coronaries normal. Contents cruor clot and fluid blood.

Lungs.—Anthracosis slight. Postmortem congestion on both sides, most marked on the right. Peribronchial lymph nodes normal. Bronchi normal.

Spleen.—Weight, 30 gms. Capsule pale bluish, of usual tenseness. Substance brownish red; not pulpy. Malpighian bodies unusually distinct. Trabeculæ evident.

Gastrointestinal Tract.—Normal. Pancreas.—Normal.

Liver.—Weight, 560 gms. Nut brown, with a somewhat accentuated mottling. Areas central in the lobules, somewhat darker than the peripheral areas. Consistence normal or slightly decreased.

Gall Bladder.—Normal.

Kidneys.—Weight, 110 gms. Strip well. Stellate veins of cortex injected. Cortical substance translucent reddish gray. Pyramids darker than cortex, with well marked radial injection. Fresh specimen shows no fat when treated with acetic acid. Glomeruli seen in sand granule form. Ureters normal.

Adrenals.—Unaltered. Bladder and Genitalia.—Normal. Aorta.—Normal.

Brain.—Weight, 1,275 gms. Dura of normal thickness and tenseness, not adherent to calvarium. Pia over vertex and occiput lifted by clear fluid, which leaks away in amount estimated at from 30 to 40 c.c. The parietal lobes on both sides of the great fissure show a number of coin-sized, reddish areas affecting an area which could be covered by the palm of the hand, circular or oval in shape, with well marked, finely irregular borders, with a very few fine points of injection, disconnected from the main area. Shade of red was usually pink, but on the right side the areas were darker and the tissue about the veins in the sulci had assumed a slightly greenish tint. On section these areas proved to be the external aspect of almost exclusively intracortical hemorrhages, varying in appearance from groups of puncta cruenta to soft, grumous, red brown lesions extending in some places into the white matter.

The finely irregular border was observed throughout. The pial vessels seemed intact. There was no lesion of pia beyond the slight discoloration on the right side mentioned above. Ventricles showed a normal amount of fluid. Rest of encephalon showed no lesion.

Spinal Cord.—No lesion evident to the naked eye.

The autopsy was performed at the South Department, Boston City Hospital, by one of us (E. E. S.) during the pathologic service of Dr. F. B. Mallory, to whom we are indebted for suggestions.

SUMMARY OF ANATOMIC FINDINGS.

Desquamation of skin after scarlatina. Organs and tissues in the main showed little gross evidence of lesion. Fresh and pigmented hemorrhagic lesions in the cortex of both parietal lobes, with edema of overlying pia mater.

MICROSCOPIC FINDINGS.

Cultures from both lungs, the liver and the spleen showed abundant growths of the *Staphylococcus pyogenes aureus*. The lung cultures were pure. The liver showed beside aureus, a bacillus of the colon group which was not farther worked out. The spleen showed beside aureus, a few colonies of streptococcus. Cultures from the meninges and from the hemorrhagic areas beneath the pia mater remained sterile.

The histologic examination of the organs of the trunk was in the main negative. A section from right lung in the area of most marked postmortem congestion showed a cellular exudate of focal character, rich in polynuclear leucocytes and in bacteria both inside and outside the cells. These bacteria were largely staphylococci but there were a few rather long chains of streptococcus-like forms, and some short, slender bacilli. The organs were in the main well preserved. It is probable that the case can be interpreted as one of scarlet fever with a terminal aureus septicemia, complicated with or derived from a bronchopneumonia.

Pieces from various portions of the brain (both at the foci of hemorrhage and at a distance) and from the cord, were fixed and stained for general histologic work, for bacteria, for neuroglia, and for fat.

Numerous pieces were examined which showed no evidence of a lesion which could be regarded at first sight as infectious. Consider, for example, the data of the following description of findings in the lesion of the left parietal lobe.

(*a*) The meshes of the pia mater cerebri and of the tunica adventitia of the majority of the short medullary arteries of the cortical system are filled with countless phagocytes. In places beneath the pia adjacent to the larger foci of hemorrhage the phagocytes fill several oil immersion fields with here and there a stray bundle of connective tissue fibers. About some of the arteries there has occurred loss of substance and replacement with fluid containing phagocytes and the stromata of blood corpuscles. The phagocytes are large, well-rounded cells of two to three or more times the cubical capacity of adventitial cells lying in situ. The nuclei of the phagocytes are in the healthy cell, constantly oval and vesicular with a more or less prominent central nucleolus. The perfectly oval nuclei are likely to be slightly eccentric in the cell. When the cells had ingested blood corpuscles or (more rarely) other cells of the blood series, the intrinsic nuclei showed a slight contraction and apparent condensation of chromatin. The nuclear membrane may fold in the major axis. In the highly vacuolate examples or in cells stuffed with blood corpuscles, the nuclei are applied closely to one, are of the cell contour, and are crescent shaped or cap shaped. The elongate character of the nucleus is preserved to a late stage in the series of changes and is observed even where the cell body was breaking up. There are some cells apparently of this series with round, deeply stained, slightly ragged nuclei and a slight rim of protoplasm, which may form the regressive stage of phagocytes which for some reason have not taken up inclusions. But in the majority of cases the regressive changes in the nuclei and the fragmentation of the cell bodies ensue on the stuffing and vacuolation of the cell bodies. It is impossible to say whether chemical or mechanical changes play the higher part here; descriptively speaking, the mechanical factors would seem sufficient to bring about the destruction of these cells, which are nourished alone by a fluid containing many kinds of detritus. Cells of this series are often caught in mitosis and in this condition are, as a rule, found just outside the muscularis of an artery.

The nerve cells near the phagocyte masses are extensively modified, mainly by edema. There are many collections of fatty detritus demonstrable by the Marchi method and by Scharlach R. in frozen sections. Many of the phagocytic cells have taken up fatty detritus in rounded masses, forming a positive picture of the vacuoles seen in general stains. Some of the larger (Betz) cells of the region have undergone another type of degeneration. By the Nissl stain this type of degeneration is not demonstrable, but by neuroglia and fibrin stains a characteristic picture is obtained of cells variously shrunken and of ragged or punched out but sharp contour, in which the nucleus is opaque and the cell body contains numerous deep blue dots or rounded masses of a mainly peripheral distribution. These dots are smaller and less angular than the normal tigroid bodies, but of somewhat the same distribution, sparing the shrunken remnant of axis-cylinder. They run out as far as the dendrites can be traced and seem to impart to the dendrites a pliable character, whence they readily stay in bent positions somewhat like glia-fibrillæ. Such cells are usually found remote from normal tissue and are, as a rule, surrounded by phagocytes of the usual type as described above. The phagocytes occasionally occupied niches in the periphery of these cells, but we should be unwilling to regard the condition as a true or essential neuronophagia. Occasionally, beside such a dotted cell, a true satellite cell is found, such as accompanies many normal nerve cells. These cells also are to all appearance inactive. The process must be regarded as peculiar, but of no great significance in point of frequency. The more frequent regressive change in the nerve cells in such conditions is probably edema and fragmentation with fatty degeneration and more or less rapid solution.

Near the phagocytic areas there is but slight evidence of change in the glia cells. A few show enlargement of the cell body (the nuclei here is as a rule spheroidal), but there is no evidence of mitosis or of new fibril formation.

Aside from the adventitial changes related with the production of the phagocytic cells, no important alteration is notable in the vessels.

(*b*) In some regions, notably in the uppermost portion of the right parietal lobe opposite the arachnoidal villi, the lesions described under (*a*) are complicated with a frank suppuration in the pia and attached villous system. In the lymphatics and free in the meshes of the fibrous envelopes of the arachnoidal villi are dense collections of polynuclear leucocytes enclosed in a fine, even mesh of fibrin. The lymphatic clefts in the pia contain granular coagulum and in their walls are fairly numerous polynuclear leucocytes. In the looser tissues beyond and especially internal to these clefts are numerous phagocytes of the usual type; some of them contain polynuclear leucocytes. The tissues beneath the pia consist of dèep masses of phagocytic cells, with here and there vessels lying almost free. A short distance inward there are few polynuclear leucocytes to be seen, and the phagocytes contain fat or blood globules exclusively.

(*c*) By the Marchi method a rather selective degeneration is demonstrable in both upper motor systems, more marked in the system arising from the left hemisphere. In the cord there is an axonal degeneration of the anterior horn cells (Nissl method) and a corresponding selective fatty change in many of the anterior roots. There are also other diffuse isolated fiber degenerations less easy to reconcile with the systematic changes. No myelin degenerations are demonstrable by the Weigert method.

SUMMARY OF MICROSCOPIC FINDINGS.

The findings microscopically were: Early broncho-

pneumonia, due to the *Staphylococcus pyogenes aureus*. Purulent infiltration of foci in the parietal pia mater and overlying arachnoidal villi. Hemorrhages in the cortex and extensive development of cells phagocytic for polynuclear leucocytes, blood corpuscles and fatty detritus, in meshes of pia and in adventitia of short arteries of the cortical system. Phagocytosis, associated with solution and fatty change of neighboring nerve tissues. Peculiar dot-like necrosis in some nerve cells, which assume the glia stain. Fatty changes in associated motor systems and early changes (axonal degeneration) in the lower motor systems.

REMARKS.

The conception of encephalitis has suffered from a dearth of adequate descriptive work. The systematic treatment has, therefore, not kept pace with that of inflammation in other tissues. For example, it was possible to say in 1886 that we can as yet present no unitary picture of processes which culminate in brain softening, if we except those which result from vascular changes.[1] Yet in 1904, in the latest systematic treatise on encephalitis, we hear that recent distinctions of encephalitis into various forms are erroneous, and that all these phenomena can be produced by any appropriate inflammatory agents, among which are numbered the organisms of meningitis and of influenza, embolism, aseptic trauma, corrosive substances and heat.[2] It is probable, however, that further study will make clear a difference in the effects of members of this series of agents.

There are several characteristics of the lesion produced in the brain by bacteria or their toxins which serve to obscure the issue by drawing attention, on the one hand, to the vascular system, and, on the other hand, to the neuroglia. Thus a recent triadic division[3] of encephalitis into, 1, purulent; 2, hemorrhagic; 3, hyperplastic, is based on the predominance in the histologic picture of suppuration, diapedesis and hemorrhage, or secondary glia-cell changes. It is, however, probable that all these pictures may be produced by identical agents. The omnipresence of the meningeal and adventitial phagocyte has contributed toward a false unification of the pictures of bacterial and those of mechanical origin.

Herein we have sought to bring out the predominance of hemorrhage and phagocytosis with destruction of cortical tissue, the focal effect of meningeal suppuration in a case of subinfection with the aureus during convalescence from scarlet fever. The case is one of cortical hemiplegia caught in process, and brings out the now frequently exemplified inflammatory origin of this disease.

1. Bernhardt in Eulenburg's' Realencyclopädie, 1886, pp. 54-135.
2. Friedmann in Flatau, Jacobsohn, und Minor, Pathol. Anat. d. Nervensystems, vol. I, 1904, p. 498.
3. Ziehen: Encephalitis Haemorrhagica Acuta, in Encyclopädische Jahrbücher, vol. vi, 1896.

Venereal Diseases and the General Practitioner.—Professor Neisser of Breslau has recently published an appeal to the general practitioner to perfect himself in the diagnosis and treatment of venereal diseases. The idea that a specialist is required for them is absurd, he thinks. Venereal diseases, more than all others, belong in the domain of general practice, and medical students should be trained to differentiate and treat them. If every medical graduate were trained in the early recognition and means of aborting these affections, this would prove the most important forward step in the prophylaxis of venereal disease. Neisser's article was published in the *Medicinische Woch.*, v. No. 15.

THE STARVATION OPERATION FOR MALIGNANCY IN THE EXTERNAL CAROTID AREA.

ITS FAILURES AND SUCCESSES.*

ROBERT H. M. DAWBARN, M.D.
NEW YORK CITY.

The present status of the starvation plan of treating malignant growths in certain regions adapted to it anatomically may, with entire truth, be said to be that of an untried plan, to all intents; and the chief reason for the present paper is to call attention to this fact, and to ask for it the justice of a thorough study, to corroborate or to overturn the views of its originator, as the results may warrant.

That the method is still practically untried, so far as the great body of the profession is concerned, has two reasons, both quite obvious. The first of these is the fact that, except in my Gross prize essay, I have never yet written on the subject. Indeed, to-day's paper may accurately be said to be the first public presentation of this subject that I have made. Repeated illnesses and the rigorous demands of professional work to the limit of my strength may, I hope, be considered a sufficient explanation. The subject is to me so fascinating that I would gladly devote to it further years of my time. I ask those who have tried this plan, or who may do so hereafter, to send me their data, whether good or bad in outcome. These will be published, when in sufficient amount to be worth while; and meantime, by means of articles in various journals, let us hope attention will be drawn to the plan.

It has been said that two reasons exist for the lack of a reasonably fair trial. The second one is the obvious discouragement of the surgeons of my own surgical society, that of New York City, for of late none of them has, at least to my knowledge, been using it. The explanation is quite plain. Reference to the detailed records in the Gross prize essay will show that but ten of our members have tried the plan, and in each instance where the final result was obtained, the case was one of cancer and not sarcoma. This is quite a remarkable fact (of course, merely the result of chance) and an unfortunate one; for in all these cases there was only a shrinkage of varying extent from little to much, for a brief period, not always stated but probably always inside a year; for these people were invariably cachectic and far advanced in cancer before being subjected to this, a last chance. Now, since in none of these was the disease stayed very long in its advance, apparently these surgeons and others, hearing of their results, have assumed that in sarcoma the period of life gained would be equally small; but have not, however, tested this assumption practically. Let us hope that the truth may soon be known, and at the hands of many operators the world over. The method at least deserves this.

By reference to my own detailed cases anyone will observe how much more favorable are the results with sarcomata than with carcinomata; and the minute anatomy of either of these tumors readily explains why this should be so.

A priori: Cancer spreads chiefly through its lymphatics; and control of the arteries does not necessarily affect the lymph channels very radically. Sarcoma, on the other hand, spreads chiefly through and along its va-

* Read at the Fifty-fifth Annual Session of the American Medical Association, in the Section on Surgery and Anatomy, and approved for publication by the Executive Committee: Drs. DeForest Willard, Charles A. Powers and J. E. Moore.

cular system; and shutting off most of its blood therefore directly opposes the spread of the sarcomatous growth.

In several instances I have recorded and shown patients with starved and shunken sarcomatous tumors, long past the three-year period, which Volkmann suggested as one after which with some degree of certainty we may claim a cure. Two cases are specially striking on the published list—both subperiosteal round-celled sarcomata of the lower jaw, a variety and a situation which Butlin, certainly an able authority, considers hopeless, however handled, and whether excised or not.

But for those who purpose repeating my own work, attention should be called to an essential step in the technic in lower-jaw cases. This is, in addition to the usual double excision of the entire external carotid (for safety done at different dates), to tie the inferior dental artery and its mylohyoid branch, just as this artery is about to enter the inferior dental canal. Also, to cut out an inch or more of the inferior dental nerve, thereby making sure that if the tumor should at some future time resume growth, this nerve being thus treated, of course on both sides of the neck, such growth would be and remain comparatively painless. It does not add more than a few minutes to the length of the operation after completing the external carotid excision, to deepen the wound toward its front, behind the ramus, until the inferior dental vessels are exposed; forcibly lifting the ramus by a sharp retractor, which also holds it immobile during the necessary dissection beneath it, is a step which aids the ease of work. In one of my reported cases I trephined the ramus to come down on the vessels and nerve; but in the other instance found it easy to find them as just detailed and without any trephining.

The reason it seems wise to control the inferior dental vessels in the lower-jaw cases is that this branch of the internal maxillary anastomoses quite freely, if indirectly, with the internal carotid, at higher points along its course.

Here should be mentioned the fact that orbital growths, or growths likely to be reached by any branches of the internal carotid, are plainly beyond hope by the starvation plan, and in fairness this point should be considered; otherwise this new plan would be attempted, as, indeed, I know of instances, in entirely hopeless fields. In a general way the lower in the external carotid area is the growth the greater are the prospects of its success. Of the twenty-nine ways in which the external carotid system can anastomose with outside systems, the internal carotid furnishes twenty-one, the subclavian seven, the innominate one. Our chief enemy, then, is the internal carotid.

The main channels within the external carotid system for such communication are three, viz., the terminal two, i.e., internal maxillary and superficial temporal, and the occipital. The former two, starting in the substance of the parotid gland, meet and mingle with the deep or internal carotid circulation in seventeen ways; the occipital with the subclavian in five ways. Since these three branches of the external carotids account then for 22 out of a total of 29 outside anastomoses, it is plain that they are our chief sources of danger and should receive our particular care; also that it would be almost impossible to starve a tumor of the parotid gland area. If Wyeth's suggestion of supplementing vascular excision by some plastic injection is to be tried, these three are the branches which require it at our hands. The normal flesh, however, requires *some* blood in order to live, and with these three branches plugged, shutting off twenty-two of the twenty-nine possible anastomoses, I have seen, in a few cases, slight sloughing follow—as an edge of the ear, or an inch or so of the skin of the face. The cancer, if soft, will regularly slough in such circumstances, which is, of course, desirable; and it should be trimmed away where dead to avoid a foul odor, septic absorption, etc.

The report of the few cases where injection has been extensively tried is not very satisfactory. However, this, like the vascular excision, is a wholly new field, and early mistakes were made as to material used, amounts injected, etc., all of which have been fully and honestly reported in the essay. It seems to me, however, that it is so advisable to cut off by this simple and quick way the seventeen undesirable anastomoses coming from the two terminal branches, that the weight of argument is greatly in favor of it. Generally, therefore, I inject the distal end of the external carotid where it enters the parotid gland, thus plugging and rendering harmless this nest of enemies. And since I have ceased to plug the occipital also, I have seen no sloughing of normal flesh. Depending on the location of the growth, I now plug either the occipital or the external carotid end, but not both. It has been determined in various ways that forty-five minims of the fluid is, in the adult, entirely safe; but much more, apparently, would not always be so. This, too, is the proper dose for the occipital, when that is chosen to be obstructed. Because it is so small a vessel, it simplifies injecting the occipital to tie the external carotid just beyond where it is given off, and then to inject this carotid closely proximal to the occipital, which thereon, of course, receives the heated fluid. The best material proves to be a mixture of hard white paraffin one part, white vaselin, nine parts. This hardens at 108 F., too high a thermal point to make it likely that any subsequent fever could melt it out, and is introduced at 120 F. With moderate dexterity and speed the injection can be completed, at this heat, before the paraffin solidifies, becoming opaque and white.

Whoever contemplates trying the injection, of course supplemental to excision of the external carotid, must remember never to take this step until he has first made absolutely certain that there is a regular bifurcation of the common into the external and internal carotids; for the anatomic arrangement which is the rule in the dog also constitutes the most frequent anomaly in man, namely, that the *internal* carotid, on its way to the brain, gives off branch after branch, which practically correspond in order and distribution with those normally arising from the *external* carotid; which last artery is, in such a case, either non-existent or is insignificant in size.

If the operator, taking a normal bifurcation of the common carotid for granted, proceeds to operate as usual, and finally to excise what he mistakenly supposes to be the external carotid, no harm is done except that he has substituted for the trifling risk of external carotid excision (certainly well below 5 per cent.) the mortality of internal carotid ligation, which Wyeth figures at 40 per cent. But if the operator proceeds to inject the upper end of his artery, supposing he is about to plug thereby the internal maxillary and superficial temporal, he will cause instant death by plugging, instead, the circle of Willis, and the vessels of the respiratory area of the brain.

This peril, like many in surgery, ceases to be a danger as soon as it is recognized. It will be plain that

the ordinary test, whereby the operator makes sure that he has the external carotid under his finger, namely, observing whether controlling it stops the pulse over the zygoma, and where the facial crosses the body of the lower jaw, is deceptive, supposing the commonest anomaly, just mentioned, to exist. For the pressure on the internal carotid, giving off later the superficial temporal, facial, and the rest, will, of course, stop their flow. However, no mistake as to the carotids can be made, providing the surgeon, before proceeding further, takes a minute for dissection, enough to convince himself that the common carotid divides in the usual way, or does not so divide. Hence it is well to begin this operation by exposure of the common carotid, and thence proceed upward, rather than to come down on the external carotid branches as the first step, and commence tying them off.

It is well to throw a ligature as soon as possible about the external carotid close to its origin, thus having it under instant control; but it will be found best not to tie it early, for then its branches, bloodless and reduced to mere threads, are with more difficulty found.

When finally the ligature is tightened and the vessel divided, its distal end should be made to take a dive, so to speak, beneath the twelfth nerve, the stylohyoid and the posterior belly of the digastric muscles, and reappearing above these structures its stump can with greater ease be followed to the parotid gland, and here injected if thought best.

When first I began to study this field of work, I carefully preserved all veins and venous plexuses, at the cost often of much vexatious delay in dissection. This was only one of various mistakes which later experience corrected, but which can not be discussed in a paper of this length. My idea was that greater anemia would result if the veins and venules were left to carry off by force of respiratory chest-action any remaining blood in the tumor; and temporarily this is a fact. As Dr. Bristow pointed out, however, when a long time later possibly remaining anastomoses are endeavoring to form new arterial supplies, they will have more difficulty in so doing if there is an absence of veins to carry away such blood. Hence the plan now thought best contemplates the simpler step of sacrificing all blood vessels as radically as possible, whether arterial or venous.

One further point in technic, too important to be omitted, is to do the first of the two external carotid excisions always on the sound or less diseased side first. This rule, the reverse of what one would naturally do, is based on painful experience. If the surgeon operated first on the side primarily controlling the malignancy, often during the regular period of waiting for recuperation between operations (two to three weeks, commonly), there will be a noticeable shrinkage of the mass. This starts a most unwise belief in the patient's mind that he is now on the highroad to recovery, and that there is no real need for operating on the other side of his neck, to which step he looks forward with dread. He shares a common belief that surgeons cut just for the pure joy of cutting, and here is, he thinks, a peculiarly atrocious instance in point. His cancer has evidently begun to go away, and why should not he take the hint and do likewise? He does; and either never returns, or does so too late from weakness due to a rapid recurrence of growth activity to render justifiable any further intervention whatever.

If, however, the operation is first performed on the carotid of the sound side, no shrinkage, of course, results to deceive him. Realizing that the starvation plan with its duplicate operations is his only hope, he abides by his surgeon's advice, and at the proper time again submits to the knife. And now, though very likely not permanent, the shrinkage will, at least as a rule in sarcoma, be of such considerable duration as to justify what has been done.

If permitted on one side only, an external carotid excision is simply a waste of time; and this is equally true as to even a ligation of both without vascular excision.

This refers, of course, to control of malignancy. But on the contrary, ligation of both external carotids renders wonderfully safe many face and mouth operations, otherwise perilous from shock due to hemorrhage; and in my opinion this step will soon come into regular employment before such otherwise bloody work. Curiously enough, Butlin (and most other authorities on malignancy) in no instance advises ligation before the usual extirpation of a tumor. Apparently, he still entertains the old fear as to hemorrhage following ligation of the external carotid—due to the lack of an internal clot here, because of the numerous branches—a fear wholly groundless. This ligation, in experienced hands, has practically no mortality. Indeed, the entire extirpation of these arteries, when not complicated by masses of diseased and adherent lymph nodes, is surprisingly safe. It is also the testimony, I believe, of all those who have tried it, that carotid excision is not especially difficult.

CONCLUSIONS.

In conclusion, I think there can be little dissent from the following propositions:

1. The starvation plan, in sarcoma, has in some instances effected permanent cures—that is, shrinkages—not otherwise possible; but it is not asserted that such may always be expected. Since, however, this plan is admittedly a *dernier ressort,* any percentage, however small, of such permanent checking of malignancy is a victory not otherwise possible.

2. In both sarcoma and carcinoma, the knowledge on the part of the patient that by this method he has one more chance, though all other plans have failed, and the growth be beyond excision, restores his courage and cheerfulness and puts aside the imminence of despair. As a surgeon has phrased it, we substitute in such a case, instead of the certainty of death, once more the uncertainty of life.

3. Even in cancers, we can be reasonably sure of a few weeks longer life, sometimes up to a year, otherwise impossible when other plans have failed. At first thought, if it should prove but a month or two of gain, we might question whether it be worth while. But in my experience patients are grateful for even a short respite; and the decision is for them to make, not for us, as to whether it is worth while. Given a man of wide business interests, for example, a few weeks longer in which to stave off the inevitable, may mean everything to him in the orderly winding up of his affairs.

4. Again and again I have found the resultant shrinkage of tumors to give promptly the greatest relief to suffering, and permit the patient to cut down or stop the large doses of morphin formerly demanded. This important point has also been observed by other operators.

5. Given a growth of the region under discussion, excessively vascular perhaps, and too large to be cut out, in several recorded instances (one of them, the first of

ll, nine years ago) this operation has so shrunken the mass and so deprived it of blood as to permit, after a short time, an extirpation of the tumor, partial or complete, not otherwise possible.

Within the past month a letter has been received from Dr. J. Chalmers DaCosta covering exactly this point. I quote from it by permission. A patient from Texas with carcinoma of the face had been seen by two distinguished Philadelphia surgeons. The growth was then too extensive to be excised, and hence operation was declined by them. Dr. DaCosta performed the carotid excision on both sides last winter. "The subsequent shrinkage was gradual, but certain," he writes; "masses of fibrous tissue were developed about it." A few weeks later he was able to perform an apparently complete removal of this cancer. His concluding words express the idea under discussion, and which represents, it may be, as practical a value to us as any in this starvation work, namely: "This use of the operation, bringing, as in this instance it did, an at first inoperable growth into the range of operation, seems to me a very important and interesting phase of the matter."

DISCUSSION.

DR. A. T. BRISTOW, Brooklyn, N. Y.—I have performed this operation eleven times on six patients, the twelfth operation being done by my assistant, Dr. Campbell. In only one of these cases was the disease sarcoma, and in this case the patient died a short time after the second operation; therefore, I can not speak from experience of the curative value of the operation in this class of cases. All the remaining cases were carcinomata, four occurring in the upper jaw, springing from the antrum. One case was an epithelioma of the lip, which had involved the lower jaw and was inoperable. In all these cases I noticed that the pain of which the patients complained ceased after operation. Shrinkage of the tumor also took place, and there was much diminution in the discharge from the cancerous mass. One of my cases was alive at the end of a year. Another I kept under observation for four months. The disease at this time was stationary. Judging from my own experience of two sudden deaths occurring one shortly after the operation and one in a case not here included, but done by Dr. Campbell at St. John's Hospital, I am obliged to come to the conclusion that there is a risk attached to this procedure which is out of proportion to the dissection. We constantly, particularly in cases of tubercular adenitis, make dissections of the neck which are far wider and more extensive, yet there is no mortality in these cases. All my cases suffered from respiratory failure when the stump of the vessel was made to take the dive beneath the hypoglossal nerve. They all recovered, but the case which my colleague lost died at this point in the operation from complete failure of respiration. I am inclined to think that interferencee with the superior laryngeal by the traction may bring about pneumogastric inhibition. The operation is sometimes easy, sometimes very difficult, and, of course, should only be resorted to in cases inoperable by ordinary methods.

DR. DAWBARN—I am sorry Dr. DaCosta is not here, as he was, at my request, the first surgeon to practice this method. As Dr. Bristow has said, and I agree, there is a sudden and complete cessation of excessive pain after external carotid excisions for malignancy, and in many cases the patients will be very thankful for a few weeks more of life, and without pain, in which to settle up his affairs. I have referred in my paper to one personal case where such a decided shrinkage took place that an operation was made possible. As to the question of mortality, although I have done the operation about 60 times, I find it very difficult to estimate mortality. We must remember that this operation is always done as a last resort in cachectic subjects, often with masses of diseased and adherent glands over the carotids, and it is a choice between this attempt and a coffin. Simple, uncomplicated ligation of both external carotids may be said to be devoid of mortality; certainly it is well below 1 per cent. in skilled hands; and excision of both these arteries in non-complicated cases, with a fair degree of vital power remaining, should not, with skillful work, result in more than 5 per cent. of mortality.

THE INFLUENCE OF THE ADIPOSE TISSUE WITH REGARD TO THE PATHOLOGY OF THE KNEE JOINT.*

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Disturbances of the knee joint caused by the adipose tissue have already been described in some cases by Johannes Müller as lipoma arborescens, and by König as lipoma solitarium. The former disease is determined by the exuberant growth of fat villi, sometimes to such an extent that they fill up the joint and cause an expansion of the capsule. Schuchardt was the first to show by his microsopic researches that these conditions had nothing to do with tuberculosis of the knee joint.

The lipoma arborescens is no real tumor like the lipoma solitarium of König, which varies from the size of a cherry to that of a walnut and is generally situated on the median side of the joint, with a pedicle reaching into the joint itself. König thinks these tumors originate in the subsynovial fat tissue, and compares them in this respect to the lipoma subperitoneal. They have been removed by König, Volkmann and others, and are supposed to result from some trauma of the synovial membrane effecting a slit through which the parasynovial and retrosynovial adipose tissue escape into the joint. These tumors are certainly not all real tumors, and I would rather class them as an inflammatory fibrous hyperplasia of the articular adipose tissue, which, according to my experience, is an important factor in causing disturbances of the knee joint. I first came across this hyperplasia of the fat tissue some years ago on incising a knee joint for the sake of extirpating the detached meniscus, as I thought, which, however, was intact, and subsequently a great many similar cases were diagnosed by me beforehand showing this hyperplasia of the fat tissue beneath the ligamentum patellæ quite typical.

The sound knee joint presents the following anatomic conditions: Under the ligamentum patellæ the synovial membrane shows two plicæ alares and a plica synovialis patellaris. The former consist of fat tissue with a coating from the synovialis, which stretches from the front margin of the tibia like a fat lobule into the joint, and even sideways beyond the ligamentum patellæ. From the central summit of the plica alaris originates the plica synovialis, which is composed of fibrous fat tissue inserted at the fossa intercondyloidæ. A sagittal section of the knee joint shows this fatty tissue situated like a wedge between the patella, femur and tibia. While the upper part adheres to the ligamentum patellæ, the lower is separated from it by the intervening bursa infrapatellaris profunda and joins the meniscus, also being connected to the periosteum of the front part of the tibia. I have dissected a large number of normal knee joints and always found the above conditions from early childhood upward, the growth of the adipose tissue varying individually, sometimes cachectic individuals showing a larger growth than fat persons.

A section of this fat tissue shows an extensive delicate network of fibrous strings interspersed with fat lobules,

* Read at the Fifty-fifth Annual Session of the American Medical Association, in the Section on Surgery and Anatomy, and approved for publication by the Executive Committee: Drs. DeForest Willard, Charles A. Powers and J. E. Moore.

the surface being covered with a single layer of endothelial cells and small villi, increasing in number from the central parts toward the surface. These villi consist of a delicate fibrous tissue covered with endothelial cells showing slight vascularity.

This normal adipose tissue is liable to grow and to produce a hyperplasia inflammatoria, even after slight trauma of the knee joint occurring chronically, and can then be felt as a pretty hard mass of fat on both sides of the ligamentum patellæ, similar to a lipoma. These growths, I found, differ widely from the normal adipose tissue as regards size, color and solidity.

The growths that I have removed have often been larger than an egg, and, beside the normal color, they show a reddish-yellow tinge, indicating hemorrhages. I have also come across regular blood clots enclosing the above-mentioned villi when the operation was performed immediately after severe attacks of pain. The adipose tissue is much more solid than you usually find it on account of the strong fibrous tissue. A section shows very markedly a network of these solid strings enclosing the enlarged lumina of blood vessels. My assistant, Dr. I. A. Becker, has described the histologic details of these cases, and I shall only give you a short summary of our investigations.

In the beginning of the process, beside centers of cellular infiltration, there are found fibrous tissue cells, leucocytes and perivascular cells, with endothelial cells winding along the surface of the increasing number of villi. The blood vessels are filled and extravasation into the surrounding tissue has taken place.

Later on you see the inflammatory process marked by granulation cells, which gradually take the place of the fat tissue, forming fibrous strings and showing the residues of hemorrhage, sometimes with pigment cells and even extensive necrosis, so that after a time the endothelial cells are joined immediately to the fibrous tissue without any intervening fat.

This process is characteristic of an inflammatory hyperplasia of the adipose tissue interspersed with strong fibrous strings, and is generally caused by some trauma, either a fall on the knee or some other hurt, such as a sudden jerk, etc. The hemorrhage must be considered as primary, followed by inflammation and exuberant growth of the villi, which are liable to be crushed between the tibia and femur, and this strangulation of the villi regularly makes the patient consult the doctor, showing symptoms quite similar to those of floating bodies of the joint.

The pain is felt quite suddenly on the median side of the joint; the knee can either not be bent or the patient is not able to stretch it. Hemorrhage into the joint itself may have taken place, but this is not generally the case. After a time an atrophy of the quadriceps muscle is more or less developed, and there is a typical swelling of the knee joint on both sides of the patella, especially in its lower part, where the ligamentum patellæ insert, which is often raised by this growth, showing pseudofluctuation. The patient should be examined standing and both knees compared. There is no discharge into the joint, whose power of motion is generally unimpaired, only presenting a slight crepitation, very different from that of arthritis.

DIAGNOSIS.

The diagnosis of these cases is not difficult, and they can be separated from the cases of derangement interne, of separation of the meniscus or of floating bodies. Separation of the meniscus causes the patient to localize the pain exactly within the joint cleft; floating bodies may be determined by Röntgen rays, while in our cases there is perhaps just a slight indication of a shadow within the otherwise clear space between patella, femur and tibia. In all my twenty-one cases which I have observed within the last year and a half, except the first, where a separation of the meniscus was diagnosed, I was able to confirm the diagnosis made beforehand by a subsequent operation.

These observations have also been made by other surgeons, but mostly accidentally while operating for floating bodies or other disturbances of the knee joint. Thus König, in the festive paper for the celebration of v. Esmarch's eightieth birthday, mentions having cured an officer by extirpating one of these villi.

Similar cases have been published by Herhold and Lauenstein, the latter's case being complicated by a fracture of the patella; also Börner, Martens and the American surgeons, Painter, Goldthwait and Ewing, have published observations similar to these.

TREATMENT.

Operations on these cases should be undertaken after the other methods, such as massage, compression, etc., have been used without success, by an incision on the median side of the patella. Of course, asepsis is a *conditio sine qua non*, and I have always followed König's "golden rule," to avoid bringing my fingers into contact with the joint and only to work with as few sterilized instruments as possible.

The result is generally very satisfactory, as the disturbance caused by these growths is removed, together with their extirpation, and the operation, carried out under the necessary aseptic conditions, is without danger.

For the first twenty-four hours after the operation I mostly use a small sterilized gauze strip as a drain to the joint. After eight days the sutures are removed and the patients may walk about, movements and massage being soon applied. The full use of the leg is secured in from six to eight weeks.

I can certainly recommend this operation, especially in such cases where other appliances have been resorted to in vain, and I have been able to remove very severe symptoms and definitely heal my patients by this method.

TWINE IN LIEU OF THE ELASTIC LIGATURE FOR PERFORMING GASTROENTEROSTOMY.*

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During the past winter two innovations have been practiced at the surgical laboratory of Columbia University. They consisted in the carrying out of suggestions[1] made in a previous communication from the laboratory, to-wit: First, that gastroenterostomy might be successfully practiced with the use of a triangular instead of a quadrangular stitch; and second, that the material for inserting the stitch might be twine instead of the elastic ligature.

Weir objected to the technic as originally devised by

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1. As has before been stated, the original impetus for this investigation, as in the case of so many others, was furnished by Dr. Robert F. Weir. I take this opportunity to thank him for many helpful suggestions and for unfailing encouragement.

McGraw, because he feared that the patency of the opening might be affected by bridges of tissue establishing themselves between the margins of the slit. He said that if a method could be found by which the elastic could be made to "punch out," it would seem to be ideal. Two students of the Columbia Medical School finally perfected the stitch. They were Messrs. Kussler and Thomas, and they should receive full credit for their important part of the work. They demonstrated that if the elastic ligature is placed in the form of two juxtaposed squares,[2] it will with certainty punch out as large an opening as is embraced by the elastic They operated on a pig, and produced a very perfect specimen of enteroenterostomy, as shown in Figure 1. This specimen was removed after the pig had lived for six months.

It having been shown in a great number of trials on dogs that this stitch would invariably produce a large

Fig. 1.—Enteroenterostomy in pig. Elastic quadrangular stitch.

and commodious opening—these specimens having been demonstrated before the American Society of Clinical Surgery, at its recent meeting in New York—this part of the work was considered completed.

Three months ago cord was substituted for the elastic ligature, and the triangular stitch was used in place of the square. Thirteen dogs were operated on, the stomachs of all of which are on exhibition in the scientific exhibit. The series is a small one, but it is consecutive.

Photographs of three of these specimens, taken by Dr. Edward Leaming, instructor in photography at Columbia University, are herewith presented.

Figure 2 shows an enteroenterostomy Figures 3 and 4 represent gastroenterostomy. Figures 2, 3 and 4 depict specimens from dogs, Figure 1, as before stated, being from a pig. The gut of this animal more nearly resembles that of man and affords, therefore, more satisfactory experimental results.

The stitch has been inserted in a simple circle, as in McGraw's technic, string, however, being substituted for elastic. In the single specimen obtained, a satisfactory, although not a wide opening was made. The advantage of the triangular stitch appears to be that the zone of necrosis can be carried as far from the main line of pressure as may be desired; in other words, the

Fig. 2.—Enteroenterostomy in dog. Twine triangular stitch.

principle of the triangular stitch differs from that of the single stitch method, in that the operator using it has complete control over the lateral size of the opening, as well as over its longitudinal dimensions. Thus the triangular stitch enables one to increase the size of the two dimensions, whereas the width of the McGraw is a constant factor not subject to change.

There has been a doubt in the minds of a great many surgeons as to whether the McGraw elastic will cut through. Enough operations on dogs have been performed at the surgical laboratory to confirm Dr. Mc-

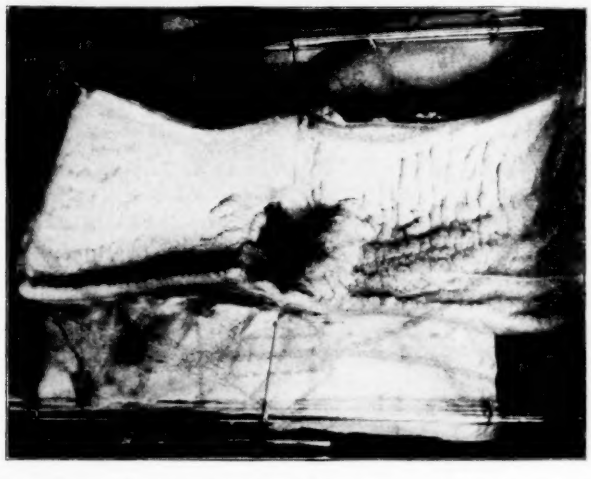

Fig. 3.—Gastroenterostomy in dog. Twine triangular stitch. Shows mucosa of gut and serosa of stomach.

Graw's contention, if, indeed, this were necessary, that, properly inserted, the elastic will always cut through.

But if it can be shown, as it appears to have been by these thirteen consecutive successes of the twine triangular ligature, that twine will cut through as efficaciously as elastic, its advantages over this material can not be overestimated. In the first place, a bit of twine is always at hand. In the second place—and this is most important—it does not deteriorate, as does the elastic, with age. Even if the elastics be obtained directly from the manufacturer at Detroit and be pro-

2. Medical News, Sept. 12, 1903.

tected from free access to air, either by being placed under water or by being folded carefully in paper, they, like every other rubber article, deteriorate and lose both their elasticity and their strength. It does not appear that the life of an elastic ligature exceeds six weeks or two months, and under unfavorable conditions, this period may even be reduced. Furthermore, the twine is much easier to introduce than the elastic, this fact being evinced by the varieties of complicated needles which have been made to facilitate the passing of the

Fig. 4.—Gastroenterostomy in dog. Twine triangular stitch. Shows mucosa of gut and serosa of stomach.

elastic ligature. Any large needle will carry the twine.

It may reasonably be felt by some that enough work has not yet been done in an experimental line to demonstrate positively the efficacy of the twine ligature. This may be true, but I beg to state that there are at the scientific exhibit the stomachs of two dogs operated on during the afternoon of June 2 in the presence of Dr. Powers and Professor Weir. Three and one-half days

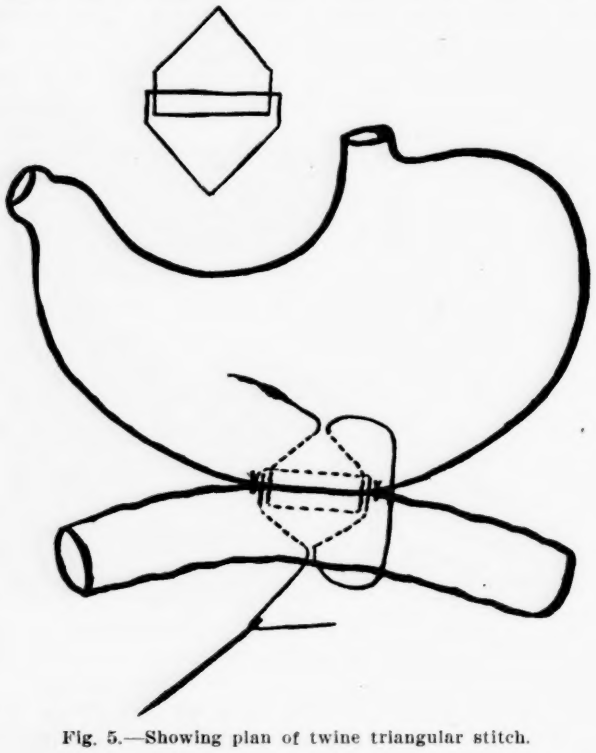

Fig. 5.—Showing plan of twine triangular stitch.

later these dogs were killed, and the openings were found to be complete. The twine had cut through as rapidly as if it had been elastic. In one the stitch had sloughed out and was detached. In the other it was barely adherent to the margin of the fistula. In point of time, then, and in certainty of action, if anything may be judged by a small but consecutive series, the twine is at least the equal of the elastic.

The method of inserting the twine in triangular fo[rm] will now be described in detail. Figure 5 shows the ou[t]line of an intestine and a stomach. This chart is o[ne] that Dr. Weir has had made, and has kindly lent to m[e]. Two Lembert stitches are placed to mark two angles [of] the triangle. The third stitch, or apex, is represente[d] on the stomach above and on the gut below. In the lowe[r] right-hand corner of the diagram, the stitch has bee[n] represented without the viscera. It is to be noticed tha[t] it looks like two little houses, one right side up an[d] the other upside down, placed on each other. This fanc[i]ful relation is, of course, changed as soon as the apice[s] are brought together. The dotted lines in the diagram mark the area of twine which is within the lumen, and show how the Lembert stitches guide in inserting it. There is no difficulty at all in putting this stitch in if one simply remembers to weave the twine from one viscus to the other, completing first one triangle in the gut and stomach, then *vice versa*.

We have not followed Dr. McGraw's technic in placing a posterior row of Lembert stitches to unite the stomach and the gut, because all our gastroenterostomies have been done on the anterior surface of the stomach, and the reinforcing stitches have been put in later. Lembert stitches are certainly necessary in this technic. It does not appear to matter whether they be interrupted or continuous, although we have usually employed the former. It has been shown to be practical to make the triangle in the stomach somewhat larger than that in the gut.

As previously intimated, no complicated needle is necessary to introduce the twine. The one in use at the laboratory has been made from an ordinary steel bobbin, which was broken off at the required length and ground to a point.

After the insertion of the twine, which always should be too strong to break with the hands (braided fish line serves the purpose well, although we have used the ordinary white commercial twine), a row of Lembert stitches is so placed as to encircle the region of the triangle. The stitches first introduced serve again as guides for this procedure.

The introduction of the twine can be accomplished in less than a minute and a half. Like every other stitch, it requires a little study and practice, but it is not a complex technic.

It is a pleasure to state that without the untiring assistance of Mr. Gordon, the student assistant at the laboratory, this work could not have been brought to its present stage, and I take this opportunity to thank him for many invaluable suggestions.

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THE DEFECTS OF THE MURPHY BUTTON, WITH SUGGESTIONS OF IMPROVEMENTS IN THE OPERATION OF GASTROENTEROSTOMY.*

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It is not proposed in this article at all to decry the merits of the well-known Murphy button, for it is conceded by everyone that by this admirable mechanical device, abdominal surgery has been largely advanced in the

* Read at the Fifty-fifth Annual Session of the American Medical Association, in the Section on Surgery and Anatomy, and approved for publication by the Executive Committee: Drs. DeForest Willard, Charles A. Powers and J. E. Moore.

last decade. Since its introduction by its distinguished inventor, however, an enormous experience as to its value as well as to its demerits has been acquired, of which it is well from time to time to take stock.

In the earlier anastomoses between intestine and intestine or intestine and stomach, or between the gall bladder and intestine or stomach, the usually employed incision demanded in its best digested form an opening which experience showed in a gastroenterostomy and in an enteroenterostomy should be at least two and one-half inches long to prevent its subsequent closure, and to complete the operation it was requisite that the edges of the applied gut and stomach, as in a gastroenterostomy, for instance, should first be sewn together and then the opening was to be rendered more secure by a second outer row of special sutures to bring and to keep together the apposing peritoneal surfaces. This took considerable time, and the mechanical button much simplified the technic and materially diminished the duration of the operation, and particularly so, if one avoided, as Murphy said should be done, using any sutures of safety to hold together the peritoneal surfaces peripheral to the button. Many surgeons even now, however, do not trust entirely to the button itself for peritoneal union, but resort to the employment of these additional safety sutures; indeed, I may say from personal experience and from observation, that the majority of surgeons known to me resort more or less frequently to these safety sutures, and naturally with a corresponding sacrifice of rapidity of the operation. These safety sutures are from time to time found to be of additional necessity by virtue of the tendency of the puckered-up intestine or stomach, when tied to the cylinder end of each half of the button, to protrude beyond the button edge when the halves of the button are crowded together. This puckering-up and surplusage of tissue is much obviated, I have found, by using Carle's method, who, after the introduction of the button halves, sutures the extra long part of the intestinal or gastric incision with one or two Lembert sutures and leaves thus a smooth edge about the button shaft.

All the earlier mechanical devices used in a gastroenterostomy, beginning with Senn's plates and Abbe's rings, and other contrivances continued along that same line, up to and including the Murphy button, had one merit of some little moment attached to them, and this was that until dissolved, if they were soluble, or dislodged, if they were not—they held the stomach and intestine in a more or less broad splint that protected the intestine from hanging so dependently from traction or from gravity action that kinkage at the suture point would likely ensue. This kinkage, with the tendency of the spur on the other side of the intestine to act as a valve, as Keppler has shown, accounts for many cases of obstruction of the biliary and pancreatic secretion at the gastroenterostomy opening, which in turn produced the so-called vicious circle, with its upward regurgitation of these secretions into the stomach. In this kinking, let me make it clear, that not only does the intestine take part in its production, but also the stomach, particularly if it is dilated, hence the various suggestions of suturing adjacent portions of the small intestine to the stomach is of little or no avail in obviating this difficulty. Furthermore, the circularly punched-out opening in the anastomosed parts when a Murphy button of 27 mm. in diameter has been usud in a gastroenterostomy, has, in my judgment, very materially aided in preventing the closure of the artificial opening thus made, and in some seventy cases in which I have employed the button, in only one have I known this closure of a gastroenterostomy opening to have taken place. Mayo and others have recorded a few instances, but compared with the multiple employment of the button this closure is but seldom encountered.

There is another mishap of more frequent occurrence in using the button, and that is the occasional escape of the button into the stomach, where it may be recognized by an *x*-ray picture and yet be borne without distress by the patient, or it may beget symptoms demanding a gastrotomy for its relief. To prevent this complication, I several years ago, as may be known to you, suggested the addition of ⅛-inch to ¼-inch flanges to be placed on two sides of the intestinal half of the button. This has worked well, for in some thirty-three cases where it has been employed by me, in but one, and that quite recently, did the button slip into the stomach.

All who have had some experience in gastric surgery must admit that comparatively often the button does not come out in spite of long waiting and patient and thorough investigation of the fecal discharges. Carle estimated that about 78 per cent. of the buttons were retained in the intestinal canal and were probably harmlessly lodged in the sulci of the large intestine. Of late the *x*-ray has aided the surgeon in tracing the missing machine.

Another disadvantage to which I will now refer is a somewhat unexpected one, and is due to the inevitable possibility of imperfection in the manufacture of the button. It has been well emphasized by Murphy himself that the buttom should be well made. I have seen the pawls, or the little projections that hold the telescoped buttons together, made of separate pieces and simply riveted or soldered to the main cylinder. This is an error, and the best manufacturers make this part and the cylinder itself out of one piece of metal; but even this does not always protect the button from separating unduly. Futhermore, the coiled spring contained in one of the halves of the button, and which is thought to be of service in keeping up the pressure as the tissues progress in their sloughing, may, rarely it is true, escape from its attachment and get loose, making an intestinal puncture possible. I have had three instances in the last two years of such accidents; one when the catches became loosened, having been soldered, probably; in the other two the wire escaped its fastening. In the latter case the buttons were made by manufacturers endorsed by Dr. Murphy himself as proficient in their make.

An additional defect is worth calling attention to, as it may explain some of these mishaps. The corroding action of the gastrointestinal secretions on the metal of the button, is nearly always seen on all buttons, retained more than, say, three weeks. The nickel-plating will be found to be gone, and if one uses—as at one time we did at the Roosevelt Hospital for economy's sake—the button several times after it has been cleaned, polished and renickeled by the maker, decided evidences of corrosion will be seen about the openings of the button. This is fairly well exhibited in the accompanying Figure 1, the button in this instance having been used three times. This corrosion may account in some cases for the slipping of the catches and the escape of the wires. In my first case, when the button, made by a noted surgical instrument maker in New York, was used in a gastroenterostomy, some nine months later the patient underwent gastrotomy for persistent painful gastric symptoms, and the button was found in the stomach separated into its two halves; no pawls or catches were to be found. The second case was a gastroenterostomy with a button

made by an endorsed manufacturer in Chicago, with my flange added to it. The operation was done in a state neighboring to New York, and the patient wrote me later that on the twenty-ninth day the lower half of the large button came away. On the thirtieth day a small spring was passed in a defecation. On the sixty-seventh day the intact enteroenterostomy button passed; but up to 144 days, when last reported on by him, the other half of the large button had not appeared, and an *x*-ray examination failed to detect it. He, however, did not have from this supposed retention any untoward symptoms. He said his stools had been carefully watched.

A third case has recently occurred where the button was passed the thirty-fifth day after a gastroenterostomy, in a complete form, but the wire spring had become loosened at one end, though still held by the grip of the button.

A lesser accident, that only impairs the technic and does not affect the patient, is one that can be easily avoided. Twice I found after suturing each half of the button in the intestine and in the stomach respectively, that I could not force the male into the female cylinder, and that I had to rip out the imperfect half and put in a better one in one case, and in the second I had to take out both halves and put in other ones. The imperfection in the buttons in these cases had been brought about by the pressure of a rather wide-holding forceps flattening out the round of the cylinders, so that they would

Fig. 1.—Showing corrosion of button and loosening of the wire spring.

not telescope. Care in employing finely-pointed catch forceps has prevented any recurrence of the difficulty.

With the objection that both surgeon and patient feel at leaving within the body a metallic device with the imperfections that are inseparable from any mechanical contrivance, it is not to be wondered at that many surgeons of distinction here and abroad have recently reverted to the previously cast-off simple method of incision and suture, or that others have tentatively tried to create new procedures of operation. For my own part, I confess I am yet on the fence. While the button has served me well in many cases, yet I feel uneasy in longer using it, and have in four cases lately tried to overcome still further its tendency to escape into the stomach by attaching in each of these instances the smaller entero-enterostomy button (which I always use to prevent the establishment of the vicious circle) to the flanged gastroenterostomy button by means of a stout but loose piece of silk, or preferably braided silk and linen fishing line, leaving the ends of the knot three or four inches long to hand down in the intestine. By this procedure I hoped to secure, by the intestinal peristaltic action, a certain amount of tugging or traction by the lower button, which usually separates first, on the upper one. I have resorted to this expedient in five instances; one of them was operated on four days ago[1]; in one, death resulted in forty-eight hours from pneumonia, but in the other three everything went on happily, though I noticed that in one case, where the buttons were retained nearly forty days, that the silk had become quite friable: Asbestos thread or fine rubber cord—not taut, however—might be employed. Fishing line worked well in one instance. See Figure 2.

1. On the sixteenth day both buttons were discharged with the silk attachment unimpaired.

The use of the oblong button has lately been applied to gastroenterostomy by Murphy and by Blake, but it does not appeal to me. It gains a larger opening, with the greater risk of lodgment in the stomach and increased amount and variety of mechanical contrivance. I look with more hope to the elastic ligature suggested by McGraw of Detroit. I have not used this procedure, for, as given to us by him, the resulting opening is not longer than that made by the incision and not wide enough in my judgment to be sufficient guard against closure.

I had determined to imitate the punching-out of the Murphy button by cutting out a round piece of the stomach and intestine and then completing the gastroenterostomy by the usual suture, when I made a suggestion to Dr. Maury of the surgical research department of the

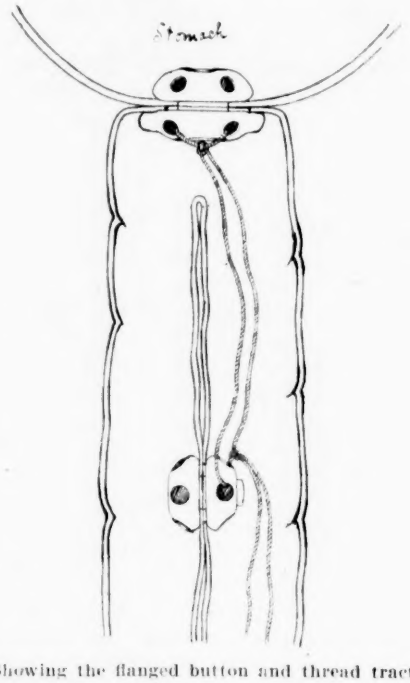

Fig. 2.—Showing the flanged button and thread tractor attached to the enteroenterostomy button.

College of Physicians and Surgeons of New York, to see if he could, on animals, contrive an elastic suture so as to bring about a decidedly large opening in all diameters. This he has been able to effect, at first making a quadrilateral opening, and more lately a satisfactorily-sized triangular opening by a rapidly-introduced suture of twine applied by a technic even simpler than that presented by Dr. McGraw.[2] I believe we may anticipate a useful result to abdominal surgery from his investigations. I shall certainly try the method in an early case.

2. As described and illustrated in the preceding paper.

Identity of Meat Poisoning and Paratyphus.—The clinical course of poisoning from meat and of paratyphoid varies, as the former is more acute, the latter subacute, but otherwise Trautmann announces that they are merely varying forms of an etiologically single infectious disease. His communication issues from the Hamburg Institute of Hygiene and is published in the *Zeitschrift f. Hyg. und Infkr.*, xlvi, No. 1.

EXCISION OF THE ULCER-BEARING AREA IN GASTRIC ULCER.*

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PHILADELPHIA.

Rash, indeed, would be the surgeon who advocated operation in all cases of gastric ulcer; but more rash would be he who practiced excision of the ulcer-bearing area in all cases operated on. I wish it distinctly understood that it is only in certain well-selected cases that the proposed operation has, or may ever have, an accepted place in surgery. We are all agreed that 25 or 50 per cent. of the cases of ulcer of the stomach may be cured by medical means. These will usually be the cases of acute round ulcer found in females under the age of 30. They are also frequently found in connection with chlorosis, and it has been found that, as a general rule, they heal under medicinal treatment. It has also been learned that the chronic ulcers, usually found in males past the age of 40, are the ones which interfere seriously with the mechanism of the stomach and have to be treated very largely by mechanical, rather than chemical, means. It has still further been found that gastroenterostomy, valuable as it is, and the operation preferred by a majority of operators, here and in other parts of the world, has its distinct limitations.

Pyloroplasty, which was practically the first of these operations on the stomach, is infrequently practiced at the present time, unless we accept the operation of Finney, assuredly the best of its kind. The objections to the Heineke-Mikulicz operation are, first, that it is dangerous to practice in open ulcers where the stomach walls are friable; second, the opening that is left (pylorus) is on a higher level than the rest of the organ, and the stomach muscle in its weakened condition is not able to lift up the gastric contents and propel them through the enlarged outlet. The Finney operation undoubtedly possesses an important advantage over the Heineke-Mikulicz procedure, as it permits drainage in the natural position and will probably always overcome even narrow strictures. The objection to it, however, is that it is not the best operation in open ulcers, inasmuch as the contents of the stomach must still pass over the ulcer or ulcers in order to reach the duodenum. Gastroenterostomy, though favored by a majority of operators, has been shown not to relieve all cases of hemorrhages, as Kocher and others have reported deaths after gastroenterostomy which apparently for a time had been entirely successful. Neither does it prevent perforation, as there have been many such cases reported after gastroenterostomy. It does not, nor do any of the methods in well-established use, prevent cicatrices forming after the ulcers. These result in stenoses, and possibly cause further trouble in the stomach.

The operation of excising the ulcer-bearing area is especially indicated in cases of multiple ulcer. It will be found not only that the acute, round or perforating ulcer is multiple in many cases, but experience gathered in the last few years indicates that chronic ulcer is more often than otherwise multiple. This has been insisted on by Mayo and others. Moynihan states that it has been rare to find a chronic ulcer that was solitary. If an ulcer is found at the anterior portion of the pylorus, one is very apt to be found directly opposite on the posterior surface. Owing to the fact that ulcers are so frequently multiple, the operation of simple excision of the ulcer, which I was disposed to think favorably of four years ago, and advocated, is sometimes inadequate and must be supplemented by a gastroenterostomy; otherwise it will fail. Excision of one ulcer does little good if others are left behind. Another reason for excision of the ulcer-bearing area is the fact that malignant transformation frequently occurs in cicatrices left after gastroenterostomy, or any other operation which does not remove the lesions, but allows them to remain as a perpetual menace to their host.

Some years ago Hauser estimated that 6 per cent. of all ulcers of the stomach resulted in carcinomata at some future time, while Doyen thought that a very much larger percentage underwent malignant change. I think we now have sufficiently accurate information to warrant us in saying that a large per cent. of all gastric ulcers undergo carcinomatous change.

Perhaps the very best information that we have on this subject is furnished from Rochester, Minn., where out of 157 cases of cancer of the stomach operated on by the Mayo brothers it was found that in 60 per cent. of them there was a well-marked history of previous ulcer, although sometimes years elapsed between the benign and malignant condition. When one remembers the fact that the topography or geography of ulcer and cancer is practically the same—that is to say, 80 per cent. of all ulcers are located in or near the pylorus, and about the same per cent. of carcinomata are found in the same region—one is led to the conclusion that ulcers more often degenerate into carcinomata than has hitherto been thought probable. Another reason why excision of the ulcer-bearing area may be done to advantage at times is the fact that gastric and duodenal ulcerations so often coexist. For this information we also owe more to Mayo than any one else. He has found that in 12 per cent. of his operative cases the ulcers were in the duodenum, and in 88 per cent. in the stomach. Moynihan states that he has practically never found a case of duodenal ulceration that was not accompanied by one in the pyloric portion of the stomach. All agree that when duodenal ulcer exists, gastric ulcer is almost sure to be present.

When we remember that duodenal ulcerations are far more likely to perforate than gastric, then I think it will be admitted that this is a strong plea for removing not only the pylorus, but the upper part of the duodenum, in such operations. This can be very easily done, inasmuch as Mayo has shown that duodenal ulcers are in all instances limited to the first two and a half inches of the duodenum. Further, all will admit that a pylorectomy, rightly done, leaves the stomach in a better condition for future usefulness than a simple gastroenterostomy, because, however well the gastroenterostomy may be done, whether it be by the excellent methods which have been demonstrated here to-day, or by any other method whatsoever, so long as the pyloric end of the stomach is patent a certain amount of the gastric contents will pass through the pylorus, cause irritation and lead to future trouble. On this account Mayo has been compelled to reoperate 6 per cent. of his 271 gastroenterostomies, and of those reoperated and subjected to excision of the ulcer-bearing area all were completely relieved—a cogent reason why this operation should be done.

TECHNIC.

As 80 per cent. of gastric ulcers are found very near the pylorus, and nearly all that produce symptoms are

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so situated, it would seem that practically all the ulcer-bearing area could be removed by doing a simple pylorectomy. One would not be apt to make a mistake in diagnosis and do this operation when not indicated, simply for the reason that ulcers in other regions are usually latent and do not give symptoms. Moreover, when the stomach is exposed one will nearly always be able to decide where the ulcers are by observing the milk-like opacity of the peritoneum, by a puckering of the coats of the stomach, by dense adhesions, or all combined. We should remember that ulcers situated about the lesser curvature are far more apt to perforate than those about the greater curvature (122 to 16). Instead of removing only the immediate pylorus, it is better, therefore, to make the incision obliquely, so as to remove at least one-half or more of the lesser curvature.

The pyloric end of the stomach can be removed in either of the two accepted ways, according to the case and fancy of the operator. The second method of Billroth is, I think, to be usually preferred. After the stomach and duodenal ends have each been permanently closed by double rows of sutures, a posterior gastroenterostomy is made. The control of hemorrhage and suturing are made easy by the use of suitable clamps. They also absolutely prevent escape of either gastric or duodenal contents. The straight clamps used by Moynihan in doing gastroenterostomy, or the curved ones of Kocher, are admirably adapted to the purpose. They should be covered with rubber tubing to prevent too great injury to stomach and bowel. Both the pylorectomy and gastroenterostomy should be completed in an hour.

The probable mortality of this operation should not exceed 10 per cent. William Mayo has performed it seven times without mortality. Were the mortality twice or thrice as great, it would still seem a perfectly justifiable procedure, as the mortality of ulcer under strictly medical treatment is at least 25 per cent., as admitted by nearly all medical authors, while Debove and Rémond place it at 50 per cent. (including secondary deaths from anemia, consumption, etc.). The operator will not choose this method in advance if the case seems to be a simple one, which will presumably yield to gastroenterostomy; but if, after entering the abdomen and carefully examining the stomach, he encounters conditions making the latter operation appear doubtful in its results, if not actually futile, then the more radical and ideal procedure should be carried out. The conditions warranting the major operations are, to recapitulate: 1, Multiple ulcers; 2, both gastric and duodenal ulcers; 3, threatened perforation of either; 4, repeated and dangerous hemorrhages; 5, a distinct tumor in patients past middle life, where the diagnosis between benignity and malignity is at best problematical.

Every one with experience knows how difficult, almost impossible, it is, in many instances, to make a differential diagnosis between ulcer and carcinoma. In such cases we should assume malignancy, actually existing or threatened, and perform a pylorectomy. It is here well to recall the brilliant results of Mayo (thirteen operations, with one death), Kocher, Robson, Murphy and Moynihan, in their resections of the pyloric end of the stomach for cancer. If it can be done, as Murphy states it was in 189 cases, by seven operators, with a mortality of 15 per cent., then, surely, a less grave operation, because less tissue is sacrificed, in better subjects, should give more favorable results. If there be the same relative difference between pylorectomy in malignant and non-malignant cases, and surely there will be, as there is in gastroenterostomy, then the mortality following pylorectomy in non-cancerous patients should not be more than one-third what it is for cancer, or 5 per cent. The Mayos had even a greater difference, or nearly four to one, as following gastroenterostomy in malignant cases their mortality was 23 per cent., whereas in their benign series it was but 6.

Billroth's and other statistics of pylorectomy for cancer compiled prior to ten years ago are of little value, and can not be accepted now, any more than statistics of operations for cancer in other regions. Billroth, for instance, admitted a death rate of 23 per cent. following his operations for cancer of the breast. To-day we feel that from 2 to 3 per cent. is more than an average, and 5 per cent. should represent the outside mortality for the most radical breast operations. The difference in stomach operations is noticeable from year to year, let alone from decade to decade, and the prohibitive mortality of twenty years ago for all operations on this organ has been succeeded by a definite but small mortality, and in almost every case is less than the medical treatment of former times.

That excision of the ulcer-bearing area can be done with less mortality than follows the strictly medical treatment of this protean affection (gastric ulcer), with its hemorrhages and anemia of to-day, perforation and subphrenic abscesses of to-morrow, to say nothing of probable stenosis and more than possible malignant disease in after years, is not, I think, much longer to be seriously questioned.

DISCUSSION

ON PAPERS BY DRS. MAURY, WEIR AND RODMAN.

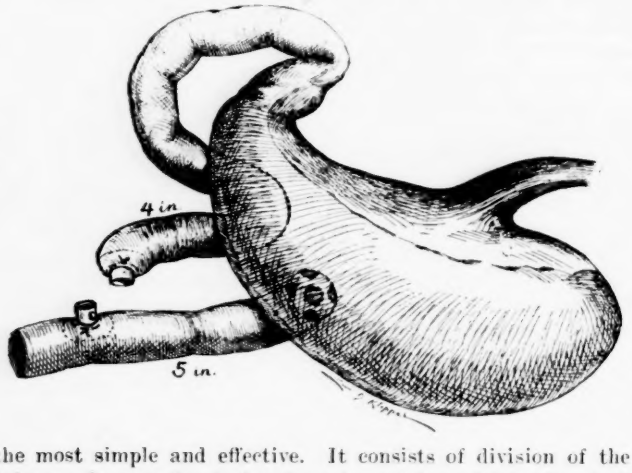
DR. A. J. OCHSNER, Chicago—My discussion will be limited to the McGraw ligature, but will not refer to the end results of gastroenterostomy or enteroenterostomy by means of the McGraw ligature, because my earliest case is not yet one and a half years old. When these cases have been done for a number of years, I think it will be wise to consider them and to speak about the ultimate value of the McGraw ligature. It may be that after a number of years we shall find that our present experience as regards the immediate results will have been of no value whatever. My experience covers 86 cases in which I have made use of the McGraw ligature; 68 of these cases were operated on at the Augustana Hospital, where I had the opportunity of following them closely, while the others were operated on in various places, and I have not been able to follow them carefully. The only ones that will be utilized in these remarks are the 68 operated on at the hospital. Of these, 19 were for carcinoma of the stomach. Simple gastroenterostomy was done for the relief of obstruction of the pylorus caused by the presence of carcinoma, and of these three died. I should say, however, that the three would have died had I not used the McGraw ligature, but simply explored them and closed the abdominal cavity again. I would not have operated by any other method. The reason that I did use the McGraw ligature was because in my early experience I had used it in a number of cases which formerly I had closed without making an anastomosis. Notwithstanding this fact, they lived for a considerable length of time, and some are still alive. Gastroenterostomy furnished drainage which enabled the patients to build up again, and in some of them it stopped the rapid progress of the carcinoma. There were 12 cases of benign stricture of the pylorus due to a healed ulcer, and all recovered. For acute ulcer of the stomach which had not entirely healed, which by its presence had either given rise to obstruction of the pylorus or to severe hemorrhage, and therefore indicated a gastroenterostomy, there were 33 cases, and 32 recovered. One died at the end of the third week, probably from a thrombus of the pulmonary, but no autopsy was permitted. The patient died suddenly, apparently after having fully recovered. One enteroenterostomy was made for a carcinomatous obstruction of the

splenic flexure of the colon, which recovered. Two enterostomies were performed on one patient, who died. This patient was very much depressed and never recovered from her depression. She was so emaciated that, had it not been for the use of the ligature, I would not have done the operation at all. I did a cholecystocolostomy for a carcinoma involving the common duct, a hopeless case, in which the gall bladder should simply have been opened, but instead of this I made an anastomosis by means of the McGraw ligature. The operation was unsatisfactory; there was a thick-walled colon and a thin-walled gall bladder. In the intestinal cases there were 67, with 5 deaths, and of these 3 were due to carcinoma and 1 to accident, a thrombus, and one to the very greatly depressed condition of the patient. My mortality in gastroenterostomy has been smaller with the use of the McGraw ligature than with any other method. The peculiar point about the gastroenterostomy with the McGraw ligature is in the fact that the patients show practically no shock. It might be supposed that the reason for the absence of shock was in the fact that it is possible to do this operation with great rapidity. In all abdominal work you have shock where you do a lot of manipulating. While an assistant, I observed that certain surgeons constantly had frightful shock on the day following operation, and, on observing the conditions under which these various patients with similar conditions had been operated on, I found that those in whom the shock was very severe were the ones in whom there had been a great amount of manipulation. My method is so simple that it is practically impossible to manipulate the abdominal organs unnecessarily, and this is the reason why the Murphy button has given such good results in comparison with the needle and thread. If you have to sew for half an hour you are likely to do a lot of mischief outside of the operation itself.

DR. WILLIAM J. MAYO, Rochester, Minn.—I am glad to note that Dr. Weir believes with me that the button has done a great work. He hesitates to give it up and comes out with a new device in which he uses a small button to lead the big button down, a sort of bait. Supposing one button drops on the inside of the stomach and the little button is in the intestine, what would the connecting string do? In one of the first gastroenterostomies ever done the patient died from inanition because the opening was made low down in the ileum, throwing the greater part of the small intestine out of use. Any one who goes into this question carefully must be convinced that the anterior operation, by being compelled to go down on the small intestine on an average about twenty inches, is not so good an operation as the posterior method, with a high jejunal opening. It may be said that the difference of a few inches will not matter, but I believe that it is important. We know that secondary jejunal ulcers, because of the acid gastric secretions being turned into the intestine through the gastroenterostomy opening, have occurred almost entirely with the anterior operation. In the posterior operation the mucous membrane is better able to protect itself, and when it has occurred with the posterior operation it has been when a long loop has been formed. As to the Murphy button, I must say that nearly all I know about gastrointestinal surgery has been taught me by this button, and I have given it up with regret. I still use it in certain cases of gastrectomy where sufficient suturing has already been done. As to Dr. Ochsner's method of doing gastrectomy and using a McGraw ligature to make the gostroenterostomy, I should have to think about it a few times before I could quite satisfy myself as to the safety of completely cutting off the little pouch of the stomach that was left and the intestine, even for the time needed for the ligature to cut through. It is, however, a quick method, and that is what we need in cases of gastrectomy for cancer, but the Murphy button is just as speedy and gives an immediate opening. I would say that the McGraw ligature has no particular place in surgery of the stomach, except in a few cases of carcinoma, in which the anterior operation is preferred because one does not like to turn a stomach with a considerable tumor out of the abdomen, and in gastric cancer there is a great reduction of gastric juice, and, therefore, less danger of secondary jejunal ulcer. Ochsner's results, however, have been unexcelled. One can do gastroenterostomy very quickly with the simple suture after the posterior method. There is no reason why mere suturing should take more than from twelve to seventeen minutes, and our results have been more than satisfactory, and we prefer and practice it excepting in the exceptional case in which the saving of five minutes gained by the button or McGraw elastic ligature may be of great importance. As to Dr. Rodman's operation, I believe it is an ideal one, but we can not carry it out in all cases. We must say to ourselves that it is a good deal of an operation for a simple ulcer. Of course, there is danger of malignant degeneration, and if the pylorus is not completely closed there is a possibility of secondary trouble. It may be said that if the gastroenterostomy is placed at the bottom of the stomach, primary vicious circle does not occur. In some cases secondary difficulty has arisen, which has sometimes been due to food working through the pylorus. In looking for the particular group in which these secondary troubles took place, I found it was in those cases where the pylorus was more or less open. Food will pass from the pylorus into the proximal loop and then will have to pass with the bile over the top of the anastomosis, causing dragging and contraction. If simple gastroenterostomy is done in a case with an open pylorus enteroanastomosis should be done to prevent the latter sequela. We would think that a low point gastroenterostomy would drain the stomach anyway, but intra-abdominal tension prevents gravity action, and muscular contraction carries the food out of the pylorus. I believe Dr. Rodman's operation is an ideal one and is indicated in a certain class of cases. I have done it seven times and the patients have recovered and stayed well.

DR. JOHN B. MURPHY, Chicago—Dr. Weir coddled the button a little more than I would. It has more mechanical difficulties in its construction than he has stated and it is more frequently improperly made. It is a little difficult to get members of the medical profession, not to speak of manufacturers of surgical instruments, to appreciate the points in a perfect instrument. I have found that all kinds of metals have been used in the manufacture of the button, and have even known of the springs have been made of steel. You all know how long a steel spring would withstand the gastric secretions—just a few hours—before dissolved by the acid. This does not change the fact that the button is easily constructed; the brass, German silver and aluminum will answer all purposes, and a manufacturer is a criminal who makes them of other materials. He was very modest in his statment as to the number of times the button falls into the stomach, but how rarely it has caused trouble. I have used Dr. Weir's modification and have also had the experience of its dropping into the stomach. It subsequently was passed. The effect of every method of intestinal anastomosis must depend on certain elements: 1. Exact apposition at time of operation. 2. Continued apposition until organic union takes place. 3. All accomplished with the least manipulation. 4. Operation in the shortest possible time, as time means exposure and manipulation. 5. Union in healthy tissues. These are all easiest of attainment up to date by using the button. It was brought out by Dr. Ochsner that the performance of certain acts while the patient is on the table often causes death. The most important of these is excessive manipulation, and the operator who uses his hands and sponges too freely in laparotomies is a most dangerous one. I recently did a gastroenterostomy by suture, but it was not the easiest nor the safest method. One does not need to have a button to do an anastomosis, as it can be done quickly with suture in trained hands. The position of the anastomosis as brought out so forcibly by Dr. Mayo is very important, i. e., sufficient of the bowel on the proximate side of the obstruction must be removed. I believe many cases of vicious circle in gastroenterostomy have been due to the use of too long a loop (12 to 18 in. of jejunum) for either anterior or posterior fixation. In the posterior position the important point is the change of position of the stomach after relief of the obstruction, i. e., the stomach again resumes the vertical position, so the union should be three or four inches from the

pylorus and the button should be inserted in the jejunum from three to five inches from the ligamentum Treitze, never from twelve to eighteen inches below the origin of the jejunum. As to Dr. Rodman's method, it is admirable. In all cases of simple ulceration of the stomach without adhesion to the liver or gall bladder it seems to me it is the ideal operation, because it once and for all re-establishes practicably the union of the stomach with the intestine in almost its normal relation and avoids a secondary opening, but the question of mortality must be settled by the clinical test. As to the cause of contraction of the opening, it is due to excessive cicatricial deposit rather than to a re-establishment of pyloric patency. This is always true so far as intestinal contractions are concerned. As to the contraction in gastroenterostomy, it was supposed to be due to the cessation of the necessity for an additional opening. I recently had a case discrediting this theory: Two years after a button gastroenterostomy the opening admitted two fingers freely and the pylorus was patent. It seems to me there is still to be accomplished one modification, and that is the modification of closure of the pylorus or the first portion of the duodenum permanently in every case of gastroenterostomy without increasing the severity of the operation. This has not been done by a method which does not involve additional hazard. All methods so far increase the risk, and the ideal operation has not yet arrived, but I am looking for some one to bring it out. The Monprofit method of jejunal posterior gastroenterostomy with the button seems



the most simple and effective. It consists of division of the jejunum four or five inches from its origin and inserting half of the button in the proximal end. The other half is put through the open end of the distal portion and carried down for five inches, where a small incision in the lateral wall of the jejunum allows the cylinder to protrude. It is then coupled to the other half of the button in the proximal end of the jejunum, and the distal end is buttoned to the posterior wall of the stomach. This avoids vicious circle and is quickly performed.

DR. ROBERT H. M. DAWBARN, New York City—Dr. Weir's first objection to the Murphy button was his allusion to the special forceps which Dr. Murphy uses to hold it, and Dr. Weir states that it results in flattening of the button. For the past ten years I have used two corks instead of forceps, and the method is so simple I hesitate to mention it. The corks act as handles. If the first half is not drawn so tightly as you think, so that the button drops back into the intestine, the cork prevents it going any farther.

DR. L. L. MCARTHUR, Chicago—I have been doing some work along the same line as Dr. Maury. It had seemed feasible to make an anastomosis by the use of the crushing forceps, much as Doyen did his closure of the intestine where resection and side-to-side anastomosis was to be made. I, therefore, crushed given areas and made a simple circular suture opposing these two crushed surfaces. I then thought to cut off the nutrition of the crushed area by an additional insertion of the suture, which should, by tightly drawing and constricting the crushed surface, shut off all possibility of circulation. In both of these efforts to get the anastomosis I failed. I have shown my failures to prevent others from wasting any more time in this way. Under certain circumstances traumatic in character, tissues are met with in which the mere apposition by suture of the neighboring intestine will be sufficient to repair the damage done. My specimens show that although no lumen can be made by opposing such crushed surfaces, the suture material employed to cut off nutrition penetrates and finally escapes into the intestine.

DR. A. PALMER DUDLEY, New York City—I recently operated on a case of cancer of the uterus, in which I attempted to do a hysterectomy, and the small intestine was so friable that while breaking up the adhesions it went into two parts. I inserted the button and waited nineteen days for it. About this time the nurse became careless and I was getting doubtful, when the patient developed a fecal fistula. Still missing the button, I probed a fistula and got a marked click. On further investigation I found the button and took it out through the same opening in which I had put it. I published a paper on this subject in the *Journal of Obsterics*, but apparently it has only been seen by a very few. I think I hold the record for putting in and taking out a Murphy button through the same incision.

DR. FLOYD W. MCRAE, Atlanta, Ga.—At the time Dr. McGraw read his original paper before this Section, some years ago, Dr. J. McFadden Gaston was presiding, and Dr. McGraw gave Dr. Gaston the credit for being the originator of this ligature. We are, therefore, doing Dr. Gaston an injustice by calling this ligature the McGraw. As to the gastroenterostomy, I wish to say that the most beautiful work I have seen is the operation which Dr. Mayo does with his modification as applied to this operation. I have seen him do it in thirty-five minutes.

DR. SAMUEL LLOYD, New York City—I performed a number of operations some years ago with the McGraw ligature and found that it acted very well and cut through rapidly, which is its chief advantage. I think rubber better than twine because it is more readily sterilized. Cutting off the pylorus is a subject which is worthy of more attention. I have done it several times without any difficulty. In a certain number of cases food may be given in twenty-four hours, and I think that in Dr. McGraw's original paper the time was referred to. Rubber has the advantage over twine in that it begins its action quicker and we can begin feeding more promptly. One great advantage in the McGraw operation is the use of the McClain needle. It makes a shell for the rubber and tearing and pulling are entirely obviated. You can determine the size of the opening with the McGraw ligature. I remember doing the McGraw operation in a benign case, one of kinking of the duodenum. A gastroenterostomy was done and the abdomen was found full of adhesion. Two years after operation I was obliged to open the abdomen again for intestinal obstruction which seemed to be high up. I suspected that the McGraw operation had been a failure and that I should have to make a new opening in the stomach, but on examination found that the original anastomosis admitted two fingers of my hand very readily.

DR. MAURY—Last fall we endeavored at the laboratory to follow up some suggestions made by Dr. Mayo relative to the closure of the fistula in the event and as a result of the pylorus being open. We closed the pylorus in the case of six dogs and inserted the usual McGraw elastic ligature. Within thirty-six hours all these dogs died. Their symptoms resembled those of tetany. The case reported by Dr. Ochsner has an important bearing on the relation of tetany to the gastric mucosa. As to Dr. Lloyd's remarks, I am not aware of his having had any information whatsoever as to the rate at which twine, if used instead of elastic, will cut through. If, as has been shown to be the fact at the Columbia laboratory, it cuts a complete opening before three and a half days, it must evidently begin to cut some time prior to that. As to sterilization, I believe it to be as easily accomplished with twine as with elastic, by simple boiling. Twine is easier to obtain and has the distinct advantage of not deteriorating with age.

DR. WEIR—The difficulties I have experienced occurred in buttons made by instrument makers who were indorsed by Dr. Murphy, hence the more likely to happen with less expert manufacturers. Dr. Rodman's suggestion is a scientific one and worthy of consideration. There is one point that Dr. Mayo brought out by inference and that is that the procedure is one only to be used where the gastroenterostomy or other procedure has failed. This should be strongly emphasized.

DR. RODMAN—One can complete a pylorectomy in any way that he pleases, either by the first or the second method of Billroth. Personally I should think it better to close it entirely. The principal claim for this operation is the fact that there is a large and unknown per cent. of cases of gastric ulcer which result in malignant change and that this is an increasing per cent. all will admit. It should only be resorted to in cases where it would seem that probably a gastroenterostomy would not prove successful as, for instance, where there were multiple ulcers. In those cases where the ulcer is large and where the tumor is accompanied by glandular involvement, as in a certain per cent. of benign ulcers, so that no one could possibly say that he was dealing with a benign condition, then I say it is certainly a rational procedure, for in such a condition we have to recognize and admit that there is a fair probability at least of malignant disease in men over 50. Every one realizes the fact that chronic ulcer of the stomach so often forms adhesions and takes in the lymphatic glands that it is not possible at the time of the operation to say that it is benign. Kehr and others have removed tumors that they supposed to be malignant which proved to be benign. I can not believe that the mortality can possibly be 30 or 40 per cent. It should not be followed by a mortality of more than 15 per cent. Even in malignant disease we realize that pylorectomy has reduced the mortality to less than 30 per cent. It must always be an operation followed by a somewhat heavier mortality than gastroenterostomy. Mayo did not believe it would be followed by a mortality as great as that. Gastroenterostomy has a mortality of 5 or 6 per cent. There is a difference, but it is not very great, and in favorable cases it seems to me that it may have an accepted place in surgery.

BORIC-ACID POISONING.

REPORT OF A FATAL CASE, WITH AUTOPSY.

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The opinion appears to exist that boric acid, even in large amounts, is entirely innocuous to the human body when applied externally to wounds, suppurating cavities, etc. That this is erroneous and that the surgeon must be on his guard against its too free usage, as it is not impossible for a fatal issue to ensue, is shown by the literature, in which five cases of severe intoxication and four deaths are reported in addition to the case at hand. These cases all resulted from the prolonged irrigation with saturated solutions of boric acid or the packing of large cavities with the dry powder.

Welch[1] reports his experience in the treatment of leucorrhea, in which he packed the upper third of the vagina with boric acid, allowing it to remain until liquefied, usually two to three days. This was repeated every seventh day. In three cases intoxication resulted, and are reported by him as follows:

CASE 1.—Two hours after the first treatment the patient was found with the skin cool, pulse feeble, respiration weak, eyes sunken and dull and the mind unclouded but despondent.

CASE 2.—Two days after the seventh treatment there was a marked depression of the nervous system and a pronounced acid discharge from the vagina. The skin of the hands, face and feet was swollen, became charred and finally exfoliated. All motion was very painful.

CASE 3.—Two days after the seventh treatment the patient was found in a state of collapse, low spirited, the pulse feebie, the eyes sunken, the face dusky, and general weakness. There was great pain in the vagina, the mucosa of which was corroded, and much discharge from the part. Temperature, 97.6; pulse, 60. The symptoms did not subside for a week, in the meantime the patient being at times cold, hysterical and prone to melancholy. The skin exfoliated in branny scales. All three cases recovered.

Spencer,[2] after an operation for syphilitic necrosis of the ankle joint packed the cavity with one-half ounce of boric acid. This was repeated on the seventh day, and on the fourteenth nausea and vomiting set in, not yielding to treatment. Other symptoms were restlessness, insomnia, hiccough, weakness, emaciation, rapid pulse, some coryza, inflammation of fauces and pharynx, bronchitis, an acid discharge from the anterior nares and a well-marked papular erythema over the face, neck, arms and chest. The symptoms came on gradually, increasing for three days, when the dressings were changed, and in ten days they had disappeared.

In addition, he speaks of two cases, one in washing out a lumbar abscess, and the other the pleural cavity, with a 5 per cent. solution of boric acid, followed by death in both cases, the symptoms being nausea, vomiting, hiccough, slight temperature, bronchial catarrh, a weak, rapid pulse and well-marked papular erythema. The report of these I was unable to find.

Hun,[3] after irrigating the pleural cavity with 16 ounces of a saturated solution of boric acid, found his patient in the evening covered with a papular erythema, and with a rapid, soft pulse. A second irrigation on the following day aggravated these symptoms, and nausea and vomiting set in. The treatment was discontinued and the patient recovered.

Molodenow[4] used a 5 per cent. solution very freely for washing out the pleural cavity in one patient and a lumbar abscess in another. This treatment was continued for one hour. Uncontrollable vomiting set in in both cases, followed by an erythema of the face and neck, and death from cardiac paralysis. Autopsy was not secured.

Williams[5] irrigated freely a case of empyema, the treatment extending over a period of two months, and finally placed 5 ounces of the dry powder in the cavity. Delirium set in, shortly followed by uncontrollable vomiting, an erythema over the body, cardiac paralysis and death. Autopsy was not secured.

Rose[6] fully reports a case, which may be summarized as follows:

History.—Boric acid was freely used in the treatment of a large open sore on the right thigh. On the fifth day a profuse diarrhea set in, but there was no change in the general condition. The mind was clear, temperature normal, with pulsation slightly increased. Later vomiting set in and the granulations assumed a sluggish appearance. The boric acid was discontinued. The diarrhea and vomiting, which consisted chiefly of mucus and water, became uncontrollable. On the ninth day the intellect was still clear, but the eyes staring, the body was bathed with a cold, clammy perspiration, and there was great weakness. The hiccoughing and the vomiting were but partially relieved by morphia. The urine for the last few days was intensely acid. The temperature was 97.4; pulse, 105. Death occurred on the following day, the temperature being 96, the pulse 140. Just before death the tongue was red and moist, the vomiting almost continuous, and the urine almost completely suppressed.

1. Medical Record, 1888, vol. xxxiv, p. 531.
2. Northwestern Lancet, 1888, vol. i, p. 22.
3. Medical News, Philadelphia, 1882, vol. xl, p. 704.
4. Tillman's Operative Surgery.
5. Unreported case of V. Williams, Chicago.
6. Medical News, Philadelphia, 1883, vol. xliii, p. 199.

Autopsy.—There were found congestion of the liver, spleen and gastrointestinal tract, with several erosions in the mucosa of the stomach. Histologically, the liver showed cloudy swelling, granular degeneration and connective tissue proliferation. The kidney tubules contained casts and the cells were swollen and granular. Much pigment was found both in the liver and kidney.

Summarizing these cases, it will be found that nausea and uncontrollable vomiting were present except in Welch's cases, all of which recovered, and all being cases in which the application was made to the vaginal mucosa, from which we may assume some difference in the absorption between this and ordinary raw surfaces. The same is true of the papular erythema of the face, neck and chest, with the additional exception of Rose's case. Depression of the nervous system and general muscular weakness is constant. In the two cases in which the temperature was recorded it was subnormal throughout. A cold, clammy perspiration was present in one-half the cases. The pulse was feeble, but of normal frequency, except in the fatal cases, where it gradually increased before death. An inflammatory condition of the pharynx, larynx and nares was confined chiefly to those cases in which there had been irrigation of the pleural cavity. Delirium was present in but one case, and that just before death. The postmortem and histologic findings in the one case that came to autopsy were those of an acute intoxication. The onset varied from twelve hours to seven days, usually beginning with profuse vomiting, followed in the course of a day by an erythema, weak pulse, depression of the nervous system and general bodily weakness.

To these cases, which are all that can be found in the literature, I desire to add the report of a fatal case which I have had the opportunity to study in the laboratory of pathology of the University of Chicago:

REPORT OF A CASE.

Patient.—W. A. D., aged 36, occupation salesman, was admitted to hospital Aug. 16, 1903, with the following history: Previous to the present trouble he had been quite well. He complained of pain in the right inguinal region, and stated that about five months previously he had noticed a swelling in this region which was diagnosed inguinal hernia. A truss was worn for four and one-half months, but the condition gradually grew worse. Suppurative lymphadenitis was then diagnosed. At this time the right ear showed signs of inflammation, and paracentesis was performed.

Examination.—The physical examination at the hospital showed both ears tender on pressure, the hearing impaired, the membranes inflamed and the right mastoid region swollen, red and painful. In the right inguinal region just above Poupart's ligament was found a large swelling, with marked fluctuation, painful on pressure and very red. Otherwise the examination was negative.

Diagnosis.—Suppurative inguinal lymphadenitis, bilateral otitis media, right suppurative mastoiditis.

Operation.—The following day the right inguinal glands were completely excised, and much pus was found. The wound was washed out with salt solution, packed with approximately 6 oz. of boric acid powder, sewed up without drainage, and sealed with collodion. A large opening was made in the right tympanic membrane at the same time. After the operation there was marked emesis of a greenish yellow fluid, which continued and became uncontrollable before death.

Course.—On the evening of the third day a diffuse erythematous and slightly papular rash appeared on the neck, chest and shoulders, with a distinct line of demarcation at the clavicle. The following day a more diffuse papular rash appeared on the back and thighs. There was no pustule formation. The skin about the operation wound was red. On August 20, 1 a. m., there was marked cyanosis, a clammy sweat, cold feet, weak, irregular pulse and uncontrollable vomiting. Delirium set in during the last few hours before death. The patient died at 7 a. m., Aug. 20, 1903. The rash was still visible. The temperature had increased with slight remissions from 98.4 on admission to 100.8, with a fall of 0.6 just before death. The pulse increased from 68 on admission to 138, with a decrease of 12 just before death. Respiration on admission was 16, which increased to 38 just prior to death.

Autopsy.—An autopsy was held three hours later by Dr. H. G. Wells. The body was that of a well-developed, well-nourished man, 165 cm. in length, not yet cold, but rigor mortis was present. The skin was white except for a purplish tinge above the clavicle and on the right side of the scrotum, and a brownish discoloration about the inguinal wound where the epidermis was elevated by a large quantity of serous fluid, which readily escaped, leaving the epidermis unattached. The lymph glands were not enlarged.

The operation wound, 11 cm long, extended to the abdominal muscles and was filled with a chocolate-colored grumous material. No pus was present in the wound, but beneath the peritoneum, posterior to the right rectus and extending under Poupart's ligament along the sheath of the great vessels was a cavity filled with a creamy pus from which several sinuses extended—one 5 cm. in length along the external border of the right rectus to the floor of the operation wound, but separated from it by a layer of fascia 2 mm. thick, and the other along the inner side of the ramus of the ischium. The cavity was lined by a soft pinkish tissue, in the floor of which was seen the internal iliac artery, but neither this nor any other of the vessels were thrombosed. The regional lymph glands were enlarged, the mesenteric normal in size and consistency. The peritoneal cavity was free from adhesions or fluid.

The left pleural cavity contained many fibrous adhesions posteriorly, and the right was completely obliterated by the same and showed a few pinhead-sized points of calcification on the pleura. The visceral pericardium showed innumerable minute subpericardial extravasations of blood, from which the parietal layer was free.

The musculature of the heart was normal, likewise the valves, and the vessels were free from sclerosis. A large postmortem blood clot was found in the right ventricle. The blood in the heart was mostly unclotted, of a granular, turbid appearance, with a slight magenta tinge.

The lungs showed no areas of consolidation, crepitation being present throughout. A large amount of blood and frothy fluid exuded on handling. The peribronchial glands were normal but for a few areas of calcification.

The gall bladder was distended, containing a dark, tarry bile, but no calculi were present. The liver was enlarged, weight 2,500 gms., pale and friable, and on the cut surface only the centers of the lobules appeared normal, the peripheries being pale.

About the spleen there were a few fibrous adhesions. Its weight was 250 gms. On the cut surface much blood was seen, though the general consistency was about normal.

The adrenals showed no change. The kidneys showed a thick, fatty capsule, were of normal size and consistence and showed remnants of fetal lobulation. The cortex was pale and the markings fairly distinct. The capsule stripped readily, leaving a smooth surface.

The surfaces of the gastrointestinal tract were normal; the prostate showed no changes.

The cranial cavity showed a moderate amount of fluid, the longitudinal sinus containing a soft, dark clot, not adherent. The brain substance was normal. No change in meninges, skull nor the adjacent sinuses.

Anatomic Diagnosis.—Recent operation wound in right inguinal region; suppurating sinuses, subperitoneal and about the sheaths of the right iliac and femoral vessels; postmortem wound over right mastoid; bilateral obliterative pleuritis; healed calcified tubercles of peribronchial glands and pleura; fatty changes in liver and kidney; fibrous cholecystitis; hyperplasia of vermiform appendix; subpericardial ecchymoses.

Bacteriologic Findings.—From the heart's blood: A smear was negative. No growths obtained on culture, except one

tube contaminated by bacillus subtilis. From the wound in the inguinal region the staphylococcus albus was obtained.

All cultures from the different viscera remained sterile.

Histology.—Skin from the neck (Erythema). Desquamation of the stratum corneum down to the stratum lucidum; much hemorrhage into this portion of the epidermis and the gland crypts; much round and epithelioid cell invasion of the stratum malpighii; comparatively little leucocytic invasion; distension of vessels of the musculature with blood.

The spleen showed some congestion; no other changes.

The lungs showed extensive destruction of air cells, congestion of large and small blood vessels and deposition of coal pigment, especially about the larger vessels. The air cells in many places were filled with red and white blood corpuscles. Polymorphonuclear leucocytes were numerous. A small amount of fibrin was present in a few alveoli. No bacteria were shown by polychrome methylene blue staining.

The lumen of the appendix was filled with areolar tissue traversed by fibrous bands, showing numerous round lymphoid cells at one point.

In the liver there was considerable fatty infiltration and some round cell proliferation in the interlobular septa about the ducts, but no other changes.

The vessels of the capsule and of the kidney itself were much congested; otherwise no changes.

The heart muscle showed slight increase in connective tissue, and some pigmentation of the muscle fibers.

The pancreas was normal.

The prostate showed a glandular proliferation of the epithelium and the acini filled with a hemorrhagic exudate and granular débris.

The abscess wall showed the muscle fibers scattered and a marked increase in connective tissue, also an infiltration of round cells and many red and white blood corpuscles, the latter chiefly of the polymorphous variety.

An analysis of a sample of the boric acid used in the hospital, and from which that used in this case was taken, was made, and the chemist reported it to be chemically pure.

Unfortunately, the reactions of the blood and secretions were not taken.

The lack of other causes, and the fact that clinically this case so closely resembles those previously mentioned, leaves no doubt as to the identity, all the cardinal points of boric-acid intoxication being present: profuse vomiting, a papular rash over the face, neck and chest, and a weak irregular pulse increasing before death. It differs only in its more rapid onset and course, the onset being immediate and the fatal termination in four days. The delirium and the slight rise in temperature are possibly indications of a greater degree of intoxication.

The postmortem and histologic findings in Rose's case are identical with those found here, the former being entirely negative except for a congestion of the liver, spleen and gastro-intestinal tract and a cloudy swelling and granular degeneration of the liver and kidney cells. In the latter we have practically the same findings, with the addition of subpericardial hemorrhages and fatty changes in the liver and kidney, together with discoloration and maceration of the tissues about the cavity in which the boric acid was placed.

These findings then limit the cause of death to one of two things: a toxemia, resulting either from the abscess in the groin or from the medicinal agent employed, as other recognizable causes were not present. Its resemblance to those cases previously reported, together with the demonstrated overuse of this substance, is sufficient to make a positive diagnosis of fatal boric-acid intoxication. The clinical features and the lack of success in cultivating pathogenic bacteria from the blood, eliminate septicemia in this case, which is the condition most likely to simulate such an intoxication.

A METHOD OF DISPENSING WITH RUBBER GLOVES AND THE ADHESIVE RUBBER DAM.

SECOND COMMUNICATION.

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CHICAGO.

A short time ago[1] I gave a preliminary account of the use of an impermeable coating designed to prevent the escape of the epithelium and sebaceous gland secretions from the skin during operation, and the entrance of blood, pus, etc., into the crevices of the skin. It consists, briefly, in the application of a 4 to 8 per cent. solution of gutta-percha in benzine or acetone—the benzine solution for use on the hands, the acetone for surface applications at and around the field of operation. The 4 per cent. benzine solution has proven the best for wear. The benzine solution, however, dries more slowly than the acetone; it requires one and a half to two and a half minutes for it to thoroughly evaporate. If the rubber has not been destroyed by heat or sterilizing processes, the parts will have a decided adhesive tendency. If the solution is not good the adhesiveness will not be manifest. The acetone solution evaporates much more rapidly and, therefore, makes the best for the field of operation.

The following experiments show the comparative results between the rubber solution and the gloves, and while great differences in various operations appear, they are due to many extraneous conditions, which are not under control by any means so far suggested. However, they give a fair idea of the comparative advantages of the rubber gloves and solution over the naked hands.

METHOD OF TESTING VALUE OF PROCEDURE.

The method employed to test the efficacy of the rubber solution in protecting the patient from infection at the hands of the operator was as follows: The solution was used either by the operator or his assistant, while the other wore gloves or used bare hands. The hands of each were subjected to the same process of disinfection so far as possible. After the operation, each would wash his hands in 1 liter of controlled sterile water. Agar plates were then made with 1 c.c. of the water, and a comparative count of the colonies made in forty-eight to seventy-two hours.

In order to obtain a fair and unbiased result, the following requirements must be fulfilled:

1. All chances of contamination from the patient himself must be avoided. Hence all operations on infected cases, on the gastrointestinal tract or biliary passages and in the vicinity of the mucous outlets, were unavailable. As a result, only a limited number of clean operations were left for selection, such, for example, as those for hernia, for varicose veins, for specific disease of the tubes, certain abdominal and somatic tumors, etc.

2. The operator and his assistant should do as nearly an equal amount of work as is compatible with the operation, so that each would be subject to equal chances of contamination from the patient.

3. Extreme care must be taken not to allow puncture of the gloves to pass unnoticed, as this occurs much more frequently than is generally supposed.

4. The rubber solution, sterile water, etc., should be

1. THE JOURNAL A. M. A., March 19, 1904.

carefully controlled. (The difficulty of fulfilling the second condition can be readily seen. The others were met satisfactorily.)

The experiments carried out thus far show that the solution, while not so perfect a protection to the patient as intact gloves, is infinitely superior to the bare hands, and is equal to or superior to the glove, considering the chances of puncture.

The rubber coating is slightly permeated by the perspiration, but perspiration is limited by the coating just as it is by the rubber adhesive plaster.

However, Harrington of Boston has shown that the secretion from the sweat glands is not septic, while epithelium and the secretion from the hair follicles are. The hair is glazed over and matted to the skin by the rubber solution, and its epithelium does not escape after applying the solution as does the perspiration.

The experiments were carried out by my assistant, Dr. Arthur D. Dunn. (The figures show the colonies obtained in the agar plates from the washings.)

SERIES 1.

No.	Rubber Solution.	Bare Hand.	Gloves.	Control.	Remarks.
1	224	*	..	0	Exploratory laparotomy; time of operation, 45 minutes.
2	56	*	...	50	Varicose veins; time, 1¼ hrs.
3	17	...	11	0	Hernia; time, 30 min. Equal amount of work by each man.
4	11	*	16	1	Varicose veins; time, 1 hr. Man with solution did rather less work than other two.
5	187	*	...	0	Rubber solution defective.
6	253	...	17	0	Rubber solution defective. Hernia; solution used by interne who was very careless.
7	24	...	169	2	Laparotomy (Dr. Schroeder).
8	36	123	24	...	Man with gloves did comparatively little work.
9	2	...	0	0	Exploratory incision, thigh. Man with solution did most work.
10	30	*		0	Varicose veins.
11	18	...	300	0	Laparotomy.
12	76	...	54	0	Hernia.
13	5	...	2	0	Laparotomy.

*Countless.

SERIES 2.

No.	Disinfected hand.	Nails.	Rubber to back of hands.	Rubber to nails.
1.	17	2	5	3
2.	25	20	0	0
3.	5	2	1	0

SERIES 3.

No.	Non-disinfected hand.	+Rubber.	Non-disinfected nails.	+Rubber.
1.	*	0	*	2
2.	*	2	*	5
3.	*	0	*	0
4.	*	5	*	12

* Countless.

In this series the rubber solution was poured on and allowed to dry on the hands without friction. The method of using friction while applying the solution at operations is open to the criticism that microbes on or near the surface are worked up through the solution.

METHOD OF PREPARATION.

The method of preparing the rubber solution, as kindly furnished by E. von Hermann, chemist, Chicago, is as follows:

1. Care must be taken to cut the gutta-percha chips in small pieces.

2. Wash in formalin, full strength, and dry.

3. Macerate the chips in benzine or acetone for three days, then filter through cotton which has been in formalin vapor for 48 hours. Repeat the filtering twice and then the solutions are ready for use. The benzine is sterilized by boiling it in a water-bath in a strong, securely corked bottle. Repeated culture tests of the solution prepared in this manner all proved sterile; 1 per cent. carbolic acid may be added without producing irritation of the skin, but is unnecessary. Formalin will not mix with the solution, and therefore can not be used. The solution will not stand boiling as it destroys the adhesiveness. The chloroform and carbon solutions are not advisable as they are too severe on the operator's hands, and are expensive.

At my suggestion the chemist macerated gutta-percha chips in benzine, acetone, chloroform and carbon tetrachlorid, and found the first two the best and cheapest, the best, as they form a thoroughly tough cover for the hands and have the most lasting qualities. They are not detrimental to the hands even after several weeks' usage. Not only that, but the skin is as soft and smooth after a full day's operating as it was on beginning. They are the cheapest, as the solution can be made (work not included) for 25 and 50 cents, respectively, per pound. A 4 per cent. solution is best; a higher percentage of gutta-percha may be used, but it rolls and scales off in an unpleasant way.

He also experimented with pure celluloid and acetone, and Schering's celloidin with ether and alcohol. These form a good covering, but are too expensive (about $1.35 per pound) for general use.

For practical purposes, it seems to me the best way to put this on the market is to place the sterilized chips in small envelopes the same as dry catgut, having a sufficient quantity in each to make a 4, 8, 12 or 16 ounce solution. The operator can then have sterilized benzine in his operating room and add the gutta-percha, thus making fresh solutions. These, like soft rubber goods, deteriorate with time, and if kept long in a hot room. This is all avoided by keeping a supply of rubber chips, as above mentioned.

METHOD OF USE.

The best method of applying is by dipping the hands into a small basin containing the solution. It should be worked in around the nails and tips of the fingers, and should be applied as high as the elbows. Between operations the hands may be washed with soap and water, spirits of soap, alcohol, bichlorid, carbolic acid or formalin solution, without interfering with the rubber coating. Brushes, however, should not be used. After cleansing the hands and before proceeding with another operation, the fingers are redipped, as the coating wears off, but one application on the hands and forearms is sufficient for the entire day. The skin of the operator does not become "water logged" or shriveled with the solution, as it does with the rubber gloves. The coating is best removed by washing the hands in benzine and drying rapidly with a towel.

I quote as follows from a letter from Dr. Van Buren Knott of Sioux City as an example of many received:

I have used the gutta-percha solution for three weeks and am very much pleased with it. I think it a very valuable protection during operative procedures. I have used the solution with and without gloves, and in either manner have been well pleased. I find it a most excellent means of protecting the hands in the application of plaster-of-paris, as it prevents the plaster from sticking to the skin and avoids the harsh, rough feeling which follows the application of a plaster cast.

Since my previous report, I have used the solution on my hands and on the operative field in all operations, septic and non-septic, and am convinced that it is a simple and practical means of protection for the operator and patient.

Overcrowding of the Profession in Belgium.—The *Gaz. Méd. Belge* remarks that it might be a good plan to shut up the medical colleges for ten years instead of hatching out a new crop of physicians every year. There is no room for even those already on hand it asserts.

Special Articles.

THE UNITED STATES PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE.

PART II. THE SERVICE AS IT IS TO-DAY.

(*Concluded from page 733.*)

SERVICE PUBLICATIONS.

The surgeon general is required by law to transmit to Congress an annual report, containing a detailed account of the operations of the service for the previous fiscal year.

The quarantine law of 1893 makes it the duty of the service, under the direction of the Secretary of the Treasury, to collect sanitary information from all quarters of the globe, and to publish and transmit this information to collectors of customs, state and municipal health officers, and other sanitarians. The sanitary condition of the world's ports is thus reported and published weekly in the *Public Health Reports* of the service. Tables and special reports showing the prevalence of epidemics and contagious diseases in the United States and foreign countries are also published weekly in the *Public Health Reports.*

Supplements to the *Public Health Reports* and reprints from it are published by the service for distribution in communities afflicted by epidemic diseases. Publications of this character bearing on smallpox, scarlet fever, yellow fever, diphtheria, typhoid fever, measles and malarial fever are printed and distributed by thousands each year.

There is a great demand for the bulletins of the hygienic laboratory. These cover a wide scope in the field of experimental and preventive medicine, as indicated by the following list of bulletins published:

No. 1.—Preliminary Note on the Viability of the *Bacillus pestis.* M. J. Rosenau.
No. 2.—Formalin Disinfection of Baggage Without Apparatus. M. J. Rosenau.
No. 3.—Sulphur Dioxid as a Germicidal Agent. H. D. Geddings.
No. 4.—Viability of the *Bacillus pestis.* M. J. Rosenau.
No. 5.—An Investigation of a Pathogenic Microbe (*B. typhi murium* Danyz) Applied to the Destruction of Rats. M. J. Rosenau.
No. 6.—Disinfection Against Mosquitoes with Formaldehyd and Sulphur Dioxid. M. J. Rosenau.
No. 7.—Laboratory Technic: Ring Test for Indol. S. B. Grubbs and Edward Francis. Collodium Sacs. S. B. Grubbs and Edward Francis. Microphotography with Simple Apparatus. H. B. Parker.
No. 8.—Laboratory Course in Bacteriology and Pathology. M. J. Rosenau.
No. 9.—Presence of Tetanus in Commercial Gelatin. John F. Anderson.
No. 10.—Report on the Prevalence and Geographic Distribution of Hookworm Disease (Uncinariasis or Anchylostomiasis) in the United States. Ch. Wardell Stiles.
No. 11.—Experimental Investigation of *Trypanosoma lewisi.* Edward Francis.
No. 12.—The Bacteriologic Impurities of Vaccine Virus; an Experimental Study. M. J. Rosenau.
No. 13.—A Statistical Study of the Intestinal Parasites of 500 White Male Patients at the United States Government Hospital for the Insane. Philip E. Garrison, Brayton H. Ransom and Earle C. Stevenson. A Parasitic Roundworm (*Agamomermis culicis* n. g., n. sp.) in American Mosquitoes (*Culex sollicitans*). Ch. Wardell Stiles. The Type Species of the Cestode Genus *Hymenolepis.* Ch. Wardell Stiles.
No. 14.—Spotted Fever (Tick Fever) of the Rocky Mountains; a New Disease. John F. Anderson.
No. 15.—Inefficiency of Ferrous Sulphate as an Antiseptic and Germicide. Allan J. McLaughlin.
No. 16.—The Antiseptic and Germicidal Properties of Glycerin. M. J. Rosenau.

The Yellow Fever Institute was founded in the bureau in 1901 for the purpose of learning all that could be learned about yellow fever, including its etiology, and to bring to this work the aid of all reputable physicians who might desire to take part therein, its membership including, besides the officers of the Marine-Hospital Service, special investigators both in this and foreign countries. It is divided into four sections, the chairman of each section being one of the division officers of the bureau, to which, under bureau organization, matter of a kindred nature would naturally come. These, together with the chairman and secretary of the institute, form an executive board to consider, especially with regard to publication, the contributions received from the members.

Thirteen bulletins have been published by the institute, and two working parties sent to Vera Cruz, Mexico, to study yellow fever. Although these investigators did not find the specific cause of yellow fever, they contributed a great deal of valuable information concerning the mode of transmission of the disease, and the life history and characteristics of the *Stegomyia fasciata.*

The bulletins of the Yellow Fever Institute are of particular interest to the people of the southern states, and of scientific interest to the profession at large. Thirteen of these bulletins have been published, and combined they present all that is known of the history, etiology, and characteristics of yellow fever.

THE HYGIENIC LABORATORY.

The work of the service in scientific research is inseparably connected with the growth of the Hygienic Laboratory. The Hygienic Laboratory was established in August, 1887, at the United States Marine-Hospital on Staten Island, New York. In 1891 the bureau in Washington was given more commodious quarters in the Butler Building, and the laboratory was transferred from New York and occupied the top floor of that building for about twelve years. Much of the work done in the Hygienic Laboratory during these years had a direct bearing on the needs of the service. The disinfecting methods used by the service in quarantine and epidemic work were perfected and placed on a scientific basis largely through the work done in the laboratory. The result is shown in the elaborate system of disinfecting apparatus which, developed by the needs of the service, has been mechanically improved and scientifically tested until now it is conceded to be the most perfect of its kind in the world.

The service not only systematized and perfected the methods of utilizing steam and sulphur dioxid and other agents in the disinfection of ships and other habitations or objects, but was the first to exploit and test the value of that now universally employed agent, formaldehyd.

The advantage of training officers who have special aptitude for research work was early appreciated by the service, and such officers were detailed from time to time for duty in the Hygienic Laboratory. These courses were frequently supplemented by foreign details, with the opportunity of studying in some of the European scientific centers. The first authoritative publication on the treatment of diphtheria by antitoxin was issued by the service, and was the result of personal instruction given an officer of this service by Behring and Roux, who separately announced their discovery of the Budapest meeting of the International Medical Congress.

Another officer of the service in the laboratory of the Pasteur Institute studied plague and the methods of preparing a curative serum and prophylactic for its prevention. The work of preparing a prophylactic serum for plague was carried to consummation in the laboratory, and thousands of doses of Haffkine's prophylactic against plague have since been produced in the laboratory, and have been distributed to quarantine stations in the United States, Hawaii and the Philippines.

The first diphtheria antitoxin manufactured in the United States was made in the Hygienic Laboratory.

The rapid growth of the laboratory work and the necessity for a separate building were brought to the

attention of Congress, and in March, 1901, a section of the act making appropriations for the sundry civil expenses of the government provided $35,000 for erection of the necessary buildings, and directed the cession, by the Secretary of the Navy, of five acres of the old Naval Observatory site for laboratory purposes. The act approved July 1, 1902, changing the name from the Marine-Hospital Service to the Public Health and Marine-Hospital Service, greatly enlarged the scope of the laboratory work and provided for an advisory board, to be made up of an officer appointed from the Medical Corps of the Army, an officer from the Medical Corps of the Navy, a scientist from the Department of Agriculture, and five appointees from civil life not connected with the service of the government, who should be personally skilled in laboratory work in relation to the public health. The advisory board consists of Prof. Wm. H. Welch, Prof. Simon Flexner, Professor Sedgwick, Prof. Victor C. Vaughan, Prof. F. F. Wesbrook, Major W. D. McCaw, U. S. A., Surgeon J. F. Urie, U. S. N., and Dr. Salmon, U. S. Department of Agriculture.

The expansion of the laboratory, as effected by this act, provides for the addition of three new divisions, viz., chemistry, medical zoology and pharmacology.

The building is now completed, and the work of the new divisions well under way. The division of zoology has already done considerable work in the investigation of parasitic diseases of man, and the division of pharmacology has been engaged in the scientific investigation of drugs with regard to their potency and pharmacopeial purity.

In accordance with an act passed July 1, 1902, providing for the licensing of all establishments engaged in interstate traffic, or in traffic in the District of Columbia, in viruses, serums, toxins, antitoxins and analogous products, the specimens and samples of these products are purchased in the open market and examined in the laboratory for purity and potency. The result of this work has been that establishments that could not comply with the requirements of the law have gone out of business, and the larger firms engaged in the manufacture of such products have been required to maintain a high standard of excellence. Where formerly it was common to find hundreds of micro-organisms in vaccine, the number found now rarely exceeds 100, and there is noted an almost entire absence of pathogenic and pyrogenic varieties.

The hygienic laboratory is now preparing a standard diphtheria antitoxic unit for use in the United States in accordance with requests of manufacturers and recommendations passed by the American Medical Association and the American Pharmaceutical Association

The course of instruction now given in the laboratory to officers of the service covers a period of about twelve months. Officers having completed this course are competent to do research work. The service now has fifteen officers who have taken this course, and who are stationed in various parts of the world pursuing original investigations.

In addition to the work indicated above, and to investigations of various contagious diseases, their etiology and modes of transmission, officers in the hygienic laboratory have done much work in the investigation of polluted water supplies, disinfection of railway coaches and other subjects affecting the public health.

The results of the work done in the laboratory are published in the bulletins which are issued from time to time, a list of which has already been given under the head of service publications.

Officers are frequently sent to investigate the cause or prevalence of disease. A commission of service officers investigated and reported to the Senate on the prevalence of leprosy in the United States in 1902. The prevalence and geographic distribution of hookworm disease and its baneful effects in the south were demonstrated by an officer of the service and reported by him in the Hygienic Laboratory Bulletin No. 10. Another officer of the service was sent last year to investigate a new disease, the so-called spotted or tick fever of the Bitter Root Valley in Montana. The results of his studies are set forth in Hygienic Laboratory Bulletin No. 14.

IMMIGRATION INSPECTION.

The medical inspection of immigrants became one of the duties of the service by act of Congress approved March 3, 1891. The subsequent immigration acts of 1893 and 1903 also provided that the medical inspection should be made by officers of the service.

Under our immigration laws, persons suffering from loathsome or dangerous contagious disease, insane persons, idiots, epileptics, and persons likely to become a public charge, are excluded, and it is the duty of the medical inspector to detect such persons and certify their physical condition for the information of the immigration authorities. The service also takes charge of the sick in the immigration hospitals, and has supervision over the hygienic surroundings of detained immigrants.

Officers stationed abroad for duty in the United States consulates, under the quarantine law of 1893, have, in addition to their quarantine duties, examined aliens embarking for the United States. They recommend to the steamship companies the refusal of passage to such aliens as would be likely to be rejected at United States ports under our laws. This foreign inspection is now being made by officers of the service on duty in the United States consulates at Naples, Italy; Kolbe, Nagasaki, and Yokohama, Japan; Hongkong and other ports in the Orient. The rejection of the alien at the port of embarkation is of such obvious advantage to the rejected alien, to the steamship company, and (in the case of a diseased alien being rejected) to the other passengers who would be exposed to infection on shipboard, that it is likely that provision will be made for maintaining a foreign inspection at all the principal European ports.

The inspection of immigrants is carried on at all our seaports, and at points on the Canadian and Mexican borders where there is direct communication by rail or steamboat between the United States and either of the two countries mentioned.

The magnitude of this inspection work can be appreciated if the fact is borne in mind that more than 850,000 immigrants arrived in the United States and were inspected by officers of the Public Health and Marine-Hospital Service during the fiscal year ending June 30, 1903.

Officers of the service receive special training for their work as medical inspectors of immigrants. The immigration station at Ellis Island, New York, is used by the service as a school of instruction where young officers, before being detailed for immigration duty at one of the other ports of entry, are trained in the detection of the particular diseases and defects likely to be found in immigrants.

FUTURE WORK OF THE SERVICE.

The future work of the service will embrace the work as outlined in the foregoing consideration of

service duties. In addition, the work will expand naturally with the growth of the Republic and the more general application of advanced sanitary methods. The General Government can secure uniform application of these methods in cities or municipalities only through the co-operation of state and local health authorities. Such co-operation is accomplished by the law of 1902. The conferences provided for by that law enable the surgeon-general to bring to the consideration of sanitary problems the concentrated knowledge of the most eminent sanitarians, and to secure through their co-operation uniformity of action in dealing with such problems.

The annual conference called for by the act of 1902, bring the state health authorities into relation with the surgeon general and the United States Government, and in time the relations of the local and municipal health officers with their respective state boards, and through the states boards with the Federal Government, will be clearly defined by uniform state laws. This will make a complete public health organization, the like of which exists in no other country.

The individual opinions and the product of their discussions in these conferences of state health officers with the surgeon general are of inestimable value in the solution of sanitary problems without in any way weakening the initiative, advisory or executive prerogatives of the Bureau of Public Health and Marine-Hospital Service.

Disposal of sewage, purification of water supplies, proper housing of the poor, and other subjects of moment, can be studied exhaustively by committees appointed by the Surgeon General from among the health officers of the various states.

The idea of co-operation of health authorities, as fostered by the present Surgeon General, extends beyond the limits of the United States and, as indicated in considering the International Sanitary Bureau, has reached the health councils of many foreign countries. The elaboration of this idea, as formulated in the plans of the Surgeon General for international sanitation of seaports, will result in the eradication of the endemic foci of contagious diseases and the lessening or abolition of quarantine restrictions.

The aspirations of the service—clean seaports, abolition of quarantine detention, pure water supplies, and slumless cities—may seem ideals set in the dim distant future, but in considering the marvelous achievements of sanitary science during the past five or six years, one can not contend that such high ideals will not be realized, if the strenuous endeavor which has marked sanitary advancement in recent years be persevered in.

As evidence of what may be accomplished in this direction, it is only necessary to consider the recent sanitary history of Habana. The attitude of foreign governments and their desire for co-operation is shown by the recent request made to the Surgeon General, as chairman of the International Sanitary Bureau, by the Costa Rican Government for an expert sanitary adviser to be detailed from the Public Health and Marine-Hospital Service to supervise the sanitation of the city of Port Limon, which has been considered the worst menace to our seaport cities since the removal of Habana from the category of infected ports.

Another illustration of international co-operation in matters of public health is shown to-day on the banks of the Rio Grande, where the health officers of both republics are working in harmony to make yellow fever on the Texas border a matter of history.

The harmony of action existing between the Superior Board of Health of Mexico and the Public Health and Marine-Hospital Service of the United States, which has been so marked during the past year with regard to the sanitary condition on both sides of the Rio Grande, is the result, in part at least, of the First International Sanitary Convention, which was held in Washington, D. C., December, 1902, referred to in another part of this article. In January of the present year, through a visit of Surgeon-General Wyman to the City of Mexico, a complete understanding was effected, and a similar plan of campaign was agreed on, with regard to yellow fever, in both republics.

The administration of quarantine in the canal zone on the Isthmus of Panama, will impose additional work on officers of the service. The Canal Commission has requested that officers of the Public Health and Marine-Hospital Service be detailed for duty on the Isthmus in connection with quarantine and bacteriologic work. This request is being complied with, and five officers have been detailed, one of whom has been made chief quarantine officer. All sanitary measures, however, including quarantine, are under the general direction of the chief sanitary officer of the canal zone.

TRAVEL NOTES.

IX.*

A WINTER SEMESTER.

LEWELLYS F. BARKER, M.D.
CHICAGO.

(Continued from page 675.)

MUNICH, July 21, 1904.

Following Gerhardt's example, the autopsy material from cases that have been studied previously in the clinic is thoroughly presented and discussed by Müller. In his epicrisis he is less anxious to confirm a diagnosis which has been made than to emphasize diseased conditions which have been overlooked or mistakenly diagnosticated. The origin of a mistake is made clear, and the way it is to be avoided another time pointed out; the saying so frequently on the lips of Gerhardt, "*Wir hätten genauer untersuchen sollen*," is evidently impressed on the students.

The more advanced students and physicians who attend Müller's clinics are never turned empty away. Notwithstanding his practice of presenting the more important clinical types so that the beginning students may possess standards in the memory and possess them thoroughly, the individual in each case is brought out and the more experienced student, therefore, is always seeing something new and having his critical powers developed. It seemed to me that Müller, with all his simplicity, had the riper intelligences among his listeners ever in mind; there was always some nugget of the unusual present, though the collection of truths as a whole might be well known; the regular visitor of the clinic had daily opportunity of meeting with at least some kind of enlarging suggestion.

The earmarks of earnest preparation were on every clinical lecture; one felt that the cases had not been sent in at haphazard, but that they had been subjected to rigid examination by the lecturer before presentation, and it required only a moderate familiarity with the more recent medical literature to be convinced that the latest and best articles in the bibliography had been regarded in the formation of the rounded view presented to the class. Especially in the study of diseases of

*The previous articles in this series have been as follows: "Travel as a Means of Post-Graduate Medical Education," by Dr. Nicholas Senn, July 23; "Is a Trip to Europe Worth Its Cost to the Medical Man?" by Dr. Lewellys F. Barker, July 30; "Spain and Ramon y Cajal," by Dr. Barker, Aug. 6; "Leprosy in the Hawaiian Islands," by Dr. Senn, Aug. 13; "Italy and the Great Antimalarial Campaign," by Dr. Barker, Aug. 20 and 27; "Father Damien, the Leper Hero," by Dr. Senn, Aug. 27; "A Winter Semester," by Dr. Barker, Sept. 3; "Medical Affairs in the Hawaiian Islands," by Dr. Senn, Sept. 10.

metabolism was this obvious; Müller's wide clinical experience in this field, his original researches, and his complete mastery of the literature, make his lectures on metabolic abnormalities of unusual interest and value.[1]

In the weekly clinics for the physicians of Munich, held in an amphitheater crowded with many of the best civil and military practitioners of the city, the depth of Müller's clinical insight and the rigor of his method are well in evidence. His clinics on diabetes mellitus, on levulosuria, on the phenomena of metabolism in the fasting condition, on the urine in lysol poisoning, on bronchitis, on esophageal dilatations and on the newer conceptions concerning irregularities of the activity of the heart chained the attention of his hearers and are sure to have a distinctly beneficial influence on contemporary medical practice in Munich.

The visiting American is struck with the relatively slight use made of the wards in medical teaching in Germany as compared with the emphasis laid on the amphitheater clinic. In this particular Germany as a whole has, I think, much to learn from the best American medical clinics. On the other hand, the question may well be asked, Have not American clinicians, in their earnest endeavor to develop and perfect the small group bedside clinic, neglected and depreciated beyond measure the functions of the larger clinic in the amphitheater? From my observation on this visit, I am inclined to answer in the affirmative. Each kind of clinic has its own task to perform, and in holding Germany culpable for its failure to utilize the wards as we do in America, we must see to it that we do not become too blameworthy in the other matter. Müller takes students into the wards for his course on percussion and auscultation, but his regular ward visits are made in the company of his assistants and an occasional invited guest only. The assistants and the guests profit greatly, it is true, for, though Müller talks but little on the visit, he examines much, and the opportunity for studying his method is excellent. It is only a pity that the students are as yet denied this nearer contact. Perhaps when the organization of the clinic has proceeded further, and the government is more liberal in the matter of assistants, a change can be made.

The assistants in the clinic have to work very hard. At present they have almost too much to do, and though there is a very good division of labor, the more ambitious of them have to struggle to secure sufficient time after completing their ward work to pursue their scientific investigations, for here, as in the best German clinics elsewhere, each clinical assistant is expected to busy himself during a part of his time with the solution of some problem. That this principle is an important one no one nowadays will deny. Physicians are like painters; so long as they are content to do only what has been done, they always do less than their predecessors. In the choice of original work Müller permits great freedom. The main thing is the moral effect of such work itself, but nothing delights him more than to secure an assistant who is not only capable and industrious, but who has the will power to carry a piece of work through to completion. In Germany, as with us in America, there is far less difficulty in finding men who wish to work than to discover individuals with the mental and moral qualities which make work effective. The German clinician, however, has this advantage over the American, that it is more often possible for him to secure assistant physicians who, besides having had a medical education, have been well trained in chemical work. The leading German physicians now give preference, when choosing assistants, to men who have had a complete chemical training, i. e., men who, in addition to the ordinary chemical work done by a medical student, have had a year's work in qualitative inorganic analysis, another six months in quantitative inorganic analysis, a year's work in organic preparations and afterwards one or two years' work in chemical research. In other words, a medical man who has already acquired a Ph.D. degree in chemistry, other things being equal, now has the best outlook in internal medicine in Germany.

A few years ago it was a training in pathologic anatomy which went far to lead to chemical success; subsequently it was perhaps bacteriologic work that counted most; now the clinician without practical chemical skill and some experience in the chemical mode of thought is seriously handicapped in the race for eminence. Pathologic physiology, with its foundation stones, physics and chemistry, rather than pathologic anatomy, has become all important. And it is not in internal medicine alone that fully-developed chemists are in demand; in allied subjects the operations of the chemist are coming more and more in evidence. One has only to look at the recent advances in bacteriology, in hygiene and in experimental therapy to be convinced of the growing importance of the chemical methods of approach. I think that the movement is an international one, and I am sure that in America the activity already evident along chemical lines in medicine is only a premonitory sign of a great development which those who live for the next two or three decades will have the opportunity to observe. The wise medical student of to-day, who is not of the simple bread-and-butter type, but who looks forward to active participation during his lifetime in the onward movement of medical science and medical practice, will not be content with the chemical training which even the medical schools of the highest class now require, but will see to it that he secures as early as possible in his student period wide enough training in chemistry to make him an independent worker in the subject. Those of us who have the opportunity to give students of the better sort advice as to the choice of their studies can do no greater kindness nor offer more useful aid than to emphasize the importance for the future of a much more thorough grounding in chemical and physical methods and ideas than the requirements of the medical curriculum as now constituted would indicate as necessary.

While recommending this thorough training in chemistry as a preparation for internal medicine, we must, however, guard against minimizing the advantages of subjects like general biology, normal and pathologic anatomy and bacteriology. Medicine and medical research are, unfortunately, too much subject to the caprices of fashion. Some distinguished investigator makes a fine contribution to medical knowledge by applying the particular methods of a given basal science; immediately there is a rush of the ambitious toward these methods, to the exclusion or neglect of others just as important. The devotees of the *Modemedizin* are as eager for the newest fad in medical method as the average woman for a novelty in bonnet or gown. In clinical work above all do we need men thoroughly grounded in all the fundamental sciences rather than in one alone; men who know their general biology as well as their human anatomy; who, in their study of physiology, have learned how to use physics and chemistry without jumping to the conclusion that there is any immediate hope of making living protoplasm or of converting raw electrical energy directly into cerebral power, and who will continue their autopsy experience diligently to control their clinical examinations and will modify their clinical methods accordingly. We need men who realize the importance of the body weight curve as well as that of the quantitative estimation of nitrogen according to Kjeldahl; men who can draw accurate conclusions from percussing the heart even if they know how to make a radiogram of that organ; men who can recognize the physical signs of a beginning tuberculosis of the apex besides being able to demonstrate the tubercle bacilli in the sputum; men who can properly palpate the pulse in addition to making a reading with the Riva-Rocci instrument and of the like more. Medicine more than any other subject requires the highest degree of many-sidedness, qualities and a training with which too often the modern tendency towards over specialization comes into conflict.

In order that medicine may go on developing as it ought to do in Munich, some reforms might well be made. In the first place, a real university hospital in which selected cases only

1. Perhaps nowhere in the literature can one find a saner or better brief collective review of the modern researches on metabolism than in his chapter on "The General Pathology of Nutrition," written for the second edition of v. Leyden's "Handbuch der Ernährungs therapie und Diätetik."

could be received, is much needed. The City Hospital now used, with its old *Kloster* in the center of it, is badly out of joint with the times. Improvements in it are gradually being made, it is true. The patients no longer eat between their urine and feces, as was formerly perforce the custom, but now eat at long tables down the middle of the wards, and in many other ways the conditions at present are far better than they were. Even the casual observer, however, sees numerous items in the hospital arrangements and management which cry for alteration. But bettering these conditions requires money in large sums. Hospital supplies are expensive. New linen throughout for a hospital of any size is a considerable item. Day rooms for patients, isolation rooms, balconies and other architectural desiderata, if granted, cost much. And the Bavarian government as at present influenced does not seem willing to provide the funds which are necessary. For private aid to the public hospitals there seems to be little hope. If the money for it were forthcoming a third clinic, too, would be an advantage; a clinic, say, in the hands of a young man, in which the overflow cases, the less interesting patients and convalescents from the other clinics could be cared for. In such a clinic the courses of auscultation and percussion might well be given. The first and second clinics would then be free for the more advanced work in internal medicine.

(To be continued.)

Clinical Reports.

A CASE OF TETANUS TREATED BY INJECTION OF ANTITETANIC SERUM.

W. S. MORDEN, M.D.

MACON, MICH.

History.—George F., aged 14, German, called me July 14. He said he awakened in the morning with a stiff neck and a general feeling of stiffness which he attributed to the jar of a mowing machine which he had ridden the day previous. I learned after considerable questioning that he had accidentally shot himself July 1 with a toy pistol, in the left hand half an inch from the base of the index and middle fingers. No attention was paid to the wound except to apply carbolic acid and do it up in an ordinary bandage.

Examination.—The patient lay on his back with legs extended, head drawn back, face swollen, anxious expression. Temperature 101.5, pulse 96, respiration 20. All the muscles of trunk and limbs were rigid excepting those of the arms. The jaws could only be separated sufficiently to admit point of teaspoon. With this general rigidity spasms were recurring every ten or fifteen minutes, and sometimes more frequently. Examination of hand showed a scar one inch long and one-quarter of an inch wide having a glazed appearance.

Treatment.—Under local anesthesia the scar tissue was all removed with scissors, under which was found a cavity extending in all directions, especially along the course of the flexor tendons. This cavity was thoroughly curetted and packed with iodoform gauze. This was renewed every day and the cavity washed out with hydrogen peroxid and repacked. Internally I at first gave a combination, potassium bromid and chloral hydrate, to relieve spasms, but on account of the patient having bitten his tongue I was obliged to leave this off, as it produced severe smarting. He was given tablets of morphia, ⅛ gr., and atropia, 1/150 gr., as needed for a few days, and then codein, ½ gr. This, together with cathartics and enemas, constituted the treatment with the exception of the serum. I gave the first dose of antitetanic serum hypodermically on the evening of July 15. July 16 and 17 he received a dose of the serum morning and evening. July 18 he received one dose at noon. Up to this time the spasms had increased in frequency and severity and opisthotonos was quite pronounced. From this time on I gave one dose per day up to July 26, and then none until July 28, when I gave the last dose, making fifteen doses in twelve days.

Result.—From July 20, after having received eight doses, a gradual improvement was evident, and the spasms grew less frequent and severe. July 28 his legs could be flexed by using considerable force, and in the course of a week he could flex and extend them at will. From this time he was given an alcohol rub twice a day. The muscles of the neck were the last to relax. The right side seemed to be the most affected. The head was drawn to the right and the right foot would turn in to a right angle with the leg during severe spasms. His nourishment was milk fed him through a rubber tube. By July 28 he could get his jaws apart sufficiently to drink from a cup and was soon able to eat soft food. August 9, twenty-six days from date of attack, he was able to walk without aid and was discharged cured.

Remarks.—As this patient had no treatment from the time of injury until the disease was fully developed, about two weeks, I think the result can be attributed largely to the use of the antitetanic serum.

A LIGATION OF THE EXTERNAL ILIAC ARTERY.

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STAPLETON, N. Y.

Following is a report of a case in which the right external iliac artery was ligated for the cure of an aneurism of the common femoral:

History.—G. M., age 30 years; nativity, Massachusetts; color, white; admitted into hospital May 24, 1904, suffering with an aneurism of the right common femoral artery. The patient had been aware of the existence of the affection for about six weeks. The tumor resembled a small bubo, just below Poupart's ligament. Expansile pulsation very perceptible. No history of syphilis. Arteries elsewhere soft and pliable. No disease of heart, lungs or kidneys. Physique slender, but well nourished. The patient gave a history of having had a suppurating bubo in the right groin eleven years before, which burst spontaneously while he was at sea and which left a scar, slightly above the level of the aneurism. He was unwilling at first to undergo an operation and left the hospital May 30. He returned June 20. The aneurism had increased in size rapidly and was causing him a great deal of pain, and his physical condition had deteriorated somewhat through loss of sleep and appetite and mental distress.

Operation.—The operation was done June 24. The incision was made parallel with Poupart's ligament, a little above the level of the inguinal canal, and the opening in the muscles was made through each layer in the direction of their fibers, as in the McBurney incision for appendectomy. This method is recommended by Dr. G. E. Brewer in his "Text-Book of Surgery." The artery was easily reached outside the peritoneal cavity, and only a little displacement of the peritoneum was required. The ligation was made with kangaroo tendon.

Recovery.—Immediately after the operation there was very perceptible reduction of the temperature in the leg and foot. The entire limb was swathed in cotton and bandages, and bottles of hot water were put beside it in bed. The natural temperature was restored the following morning. Recovery was progressive and uneventful, the patient being kept in bed twenty days. He left the hospital July 18 completely recovered. The tumor then showed evidences of becoming absorbed.

Negative Agglutination in Mixed Typhoid Infection.—H. Kayser of Strasburg has encountered a case of typhoid fever in which typhoid bacilli were found in the stool, but staphylococci were found in the blood. The agglutination test was negative. He recommends, therefore, in a communication in the *Archiv f. Hygiene*, xlviii, No. 4, 1904, that the blood should be examined for other micro-organisms in case of the failure of agglutination with typhoid and paratyphoid cultures in unmistakable typhoid or paratyphoid fever.

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STATE SUPERVISION OF PUBLIC AND PRIVATE CARE OF THE INSANE.

The largest single enterprise in which the individual states in our country engage is the care of the insane. The State of New York has an insane population of 23,000, cared for at an annual expense to the state of $5,000,000, and, although many states have a smaller number in proportion to their inhabitants, others have a still greater. California, for instance, has 6,000 insane—a number larger in proportion to her population than any other state. In passing it may be suggested that it would be an interesting subject of study to ascertain the causes of this heavy proportion of insanity in a comparatively new state.

Everyone must have observed that there is at the present time a distinct renewal of public interest in this function of the state, a decided tendency to question the methods usually employed. Public care of the insane is managed in several different ways. California and New York, for instance, maintain all their public wards in state institutions; Wisconsin has a unique system of state subsidy to county asylums, while Illinois and most of the states divide their insane between state asylums and county poor-houses, the latter being theoretically for the chronic cases, although practically this is far from the rule. It may be safely stated that the tendency is toward exclusive state care, as the state asylums are superior in equipment and in medical care, and the method is comparatively simple and compact. Adequate supervision over county institutions is difficult, if not impossible. The question, however, is far from being solved by so simple an expedient as a change from county to state asylums It is clear that a malady which entails on its victims the double disabilities inflicted by insanity—mental and material helplessness—requires special safeguards, and consequently there has grown up everywhere a system more or less effective of public supervision of the care of the insane.

Scotland is frequently pointed out as the country which has the most completely organized method of supervision—a method which for elasticity and effectiveness is unexcelled. The Scotch system culminates in the Board of Lunacy Commissioners, consisting of five men, two unpaid and three salaried, the latter being physicians who hold their office during good behavior until the age of retirement at 62. Physicians who have served with special distinction on this board, such as Arthur Mitchell and John Sibbold, have been knighted on their retirement.

Every insane person in Scotland is under the care and protection of this board, whether in a public or private institution, whether placed in a private family at state expense, or living with his own relatives. The board has various deputies who act as visitors, but a large amount of personal supervision and medical examination is expected of the members themselves, as well as the usual supervisory and advisory duties which are ascribed by law to the State Boards of Charities in this country.

Without going into the detail of the Scotch system, it can be seen that there is no wide difference between it and the one frequently employed in the United States, and, indeed, at the time it was adopted there is reason to believe that the framers of it received certain suggestions from our methods. At that time, in the middle of the last century, the public care of the insane was a matter of much concern, and many asylums were building in our eastern states, which attracted from abroad men interested in learning American methods. Yet now, while Scotland boasts an almost entirely satisfactory system, our own country is conscious of a growing dissatisfaction, not only in the condition of many individual asylums, but in the whole method of management; a dissatisfaction which expresses itself in more or less vague efforts at reform, in substituting administrative boards for supervisory bodies, boards of control for boards of charities. We are not interested at this moment in judging between the relative merits of these different plans; to our mind the root of the vague distrust so generally felt in this country lies far deeper and can never be eradicated by superficial reforms.

Bluntly speaking, the state political organizations of both parties have laid hold of the state institutions for the insane, and have used the appointments and appropriations for party ends, more or less extensively. In some states this exploitation has not been necessary for party success, and the institutions have perhaps suffered little from it, but in others it has assumed the proportions of a plague. Occasionally the institutions have been rescued by determined individual effort, as when the lamented Governor Mount of Indiana, by his personal will, pulled the asylums out of the hands of the politicians; but Indiana herself is a melancholy proof of the evanescent nature of a purely personal reform, since his successor has by no means shown the same spirit.

Illinois, whose institutions were once the pride of the Middle West, has become the most conspicuous instance of the ruin wrought by political interference in public affairs which should be subject to physicians and humanitarians alone. A recent series of editorials in the *Illinois State Medical Journal* has shown with indisputable clearness the fall of the Illinois institutions.

and the continual loss to the state of the most eminent men connected with them.

Perhaps no crueller sacrifice has been demanded by the political Moloch than that of Dr. Runge, superintendent of the St. Louis City Hospital. Although his scientific and humane management had given him a national reputation, he was compelled to resign a few months ago, and his untimely death from pneumonia, which followed almost immediately, is believed to be in part attributable to the mental strain entailed by his heroic but futile struggle against the politicians.

We may as well face the truth that there is a deep-seated evil which can not be eradicated by such superficial remedies as changing the form or the name of the power of boards, nor even by the mere passing of a merit law. The efforts of the profession and of the public must be permanently enlisted in demanding genuine devotion and expert ability in those who compose these boards. Given a board of the character which we have a right to demand—one free from interference of partisan politics—the enlargement of its scope to include private asylums would be a great gain. A system of state licensing and adequate supervision of private asylums would give the public a confidence in them which it now lacks, and would stimulate the creation of small private sanatoria, which are so rare in the whole Middle West. Our state asylums contain many free patients who could well afford to pay modest maintenance fees, and whose friends would prefer private care for them if the private institutions were at hand, and if the public did not feel a distrust in these, even greater, in some instances, than its distrust of the state institutions.

Above all, the appointments in the asylums must be made on a basis of merit, with the permanency which is found in similar positions abroad, and which is the *sine qua non* of good service. These conditions the public must understand, and these limitations the politicians must respect if the care of the insane in America is to keep pace with the general advance of humanitarian effort.

GANGRENE AS A COMPLICATION OF HEMOPHILIA.

Hemophilia is a familial blood disorder transmitted principally through females, who themselves generally escape. The first manifestations usually appear in childhood, and the affection is rare after adolescence. Death is the usual outcome. An attempt has been made to distinguish a spontaneous and a traumatic form of the disease, but it seems probable that traumatism occurs in all cases, perhaps slight and unobserved at times. Gangrene is a not uncommon complication, being attributable to the pressure exerted by extravasations of blood on the surrounding tissues. Hemorrhage sometimes takes place into a joint, and the blood may be absorbed or a panarthritis may result, with deformity and ankylosis.

The etiology of hemophilia is obscure. The hemorrhage has been referred by some to a disproportion between the relatively large amount of blood and the capacity of the vessels; by others to their small caliber and the delicacy of their walls and to fatty degeneration of the latter, and by still others to diminished coagulability of the blood. The disorder has further been considered of neuropathic and of infectious origin. A case of unusual character has been reported by Géza Faludi,[1] in which amputation became necessary in consequence of gangrene of one of the lower extremities. The patient was a boy, 6½ years old, in whom severe hemorrhage followed circumcision, probably ritual in character, in the first or second week of life. From the fourth month subcutaneous extravasations of blood began to appear in different parts of the body, at times as a result of insignificant injury, at other times independently of any obvious traumatism. In addition, there were hemorrhages from the nose and gums. During the second year a copious extravasation of blood took place into the left knee joint. At the age of 5 years, following a fall, the entire right upper extremity became swollen and in a short time cool, while the pulse was scarcely palpable. Improvement ensued under treatment, leaving, however, stiffness of the elbow joint and contracture of the fingers. Somewhat later an extravasation of blood took place into the right ankle joint and also profuse epistaxis. In the following month the child fell and, it was thought, suffered an injury to the right popliteal fossa. An extravasation of blood took place, gradually involving the entire distal portion of the extremity. The part became cool and insensitive, and large blebs formed on the surface. Finally gangrene developed, and amputation of the leg was performed at the junction of the middle and upper thirds. Conditions, however, gradually grew worse, and death took place two weeks later.

Postmortem examination disclosed, apart from the direct results of the operation, the presence of pulmonary edema, universal anemia, hemorrhagic extravasation into various muscles, bilateral hydrothorax, circumscribed adhesive pleurisy on the right, chronic circumscribed perisplenitis and perihepatitis, dilatation of the heart, fatty degeneration of the myocardium and parenchymatous and fatty degeneration of the liver and kidneys. In the joint of the amputated member the cartilage covering the astragalus and the bone itself, as well as the internal malleolus, were, in part, softened. The percentage of hemoglobin had been fifty, and the blood picture that of profound anemia. No marked change was found in the walls of the vessels. In the family history a maternal uncle had often suffered from hemorrhage, dying from this cause after extraction of a tooth. A prematurely born brother died on the thirteenth day from epistaxis.

1. Archiv für Kinderheilkunde, vol. xxxix. Nos. 1-3, p. 92.

THE TOXICITY OF BORIC ACID.

The harmlessness of boric acid is assumed by all, so that it has come to be one of the most popular agents in the hands of both profession and laity, not to mention the preparers of foodstuffs. As a lecturer on materia medica used to say to his classes, "Boric acid is valuable for the harm it has not done." Yet, as shown by an article on another page,[1] boric acid has, under exceptional conditions, been a cause of death in several instances. If we put together the facts brought out by Best and the results obtained by Wiley in his series of experiments on the effects of boric acid in food, we have basis for a fair conclusion as to the exact limits of safety of boric acid.

Wiley found that boric acid in quantities of four or five grams per day continued for some time results in most cases in loss of appetite and inability to perform work of any kind. Four grams per day may be regarded as the limit of exhibition, beyond which the normal man may not go; a majority of normal men can take three grams per day for a somewhat protracted period and still perform their duties. They commonly felt injurious effects from this dose, however, and it is certain that the normal man could not long continue to receive three grams per day. One-half gram per day for 50 days produced in some instances somewhat unfavorable effects, so that it would seem that while this amount can be taken for a limited period of time without much impairment of health, its protracted use would not be safe. It is estimated that a person eating butter and meat, both treated with boric acid as a preservative, would receive, perhaps, as much as one-half gram per day. If, however, the diet were varied, this amount would be reduced, and no harm might result in a very long time. From this it may be concluded that occasional use of foods preserved by ordinary quantities of boric acid is not likely to cause any appreciable injury, but a dietary composed solely of such foods might, in the course of some weeks, cause much disturbance. There seems to be particular danger of renal injury from the boric acid in its elimination, for about 80 per cent of the boric acid escapes in the urine.

When very large quantities of boric acid enter the circulation in a short space of time, however, there is profound intoxication which, in five reported cases, has led to death. There is no record of fatal poisoning from boric acid administered internally, all these cases having resulted from absorption from wounded surfaces. The packing of wound cavities or the vagina with a solid mass of boric acid seems to be a not uncommon practice, although as a method of treatment it may be open to question. It certainly is a dangerous procedure, whatever its therapeutic value, for, although large numbers of patients may show no harmful effects, yet it is evidently capable of causing serious and even fatal intoxication. This procedure is based on the assumption that boric acid is non-toxic in any quantity, which is not true. Care must also be used in irrigating large cavities with boric acid, since serious symptoms may result from the amount of it that may be absorbed from an empyema cavity or a lumbar abscess.

1. See page 805.

PSEUDO-ASCITES.

Although free fluid in the peritoneal cavity is ordinarily recognizable with ease, other conditions may cause similar symptoms. On the one hand, such fluid may, in consequence of adhesions or of gaseous distention, give rise to an asymmetrical area of dullness, while its mobility on change of position may be interfered with. On the other hand, obese or edematous abdominal walls yield a sort of undulation on percussion, while properitoneal abscesses or lipomata, tumors of the intestinal wall, or deeply seated abdominal neoplasms or cystic tumors of the abdominal viscera may be a source of error in diagnosis. The greatest difficulty of differentiation, however, is encountered in connection with a condition described by Dr. L. Tobler[1] as pseudo-ascites, which is dependent on the presence of fluid in distended small intestine with an elongated mesentery. The affection was observed in children between two and one-half and nine years of age, and especially in girls. It is characterized by gradual increase in the size of the abdomen, in connection with continued, intermittent or recurrent diarrhea, lasting for months or years. The child, which may likewise be rachitic, becomes debilitated and emaciated. It may exhibit also enlarged lymphatic glands or tuberculosis of bones or lungs. There is, as a rule, no fever, and subjective symptoms are usually wanting, or there may from time to time be complaint of abdominal pain.

As a rule, the abdomen itself is distended, its cutaneous covering stretched, shining or scaly, the umbilicus obliterated, the veins distinct. In the standing posture the abdomen is not rarely pendulous, forming at times a transverse fold at the symphysis, and frequently the resistance is increased in the lower portions. Variations in the state of the abdomen take place, and distention may be replaced by relaxation with a sense of doughy resistance in the hypogastrium, and at times a splashing sound may be appreciable. Undulation may be present in either event, the most distinct and shortest wave impulse being obtained when the area of dullness is considerable and symmetrical and the tension of the abdominal walls is marked. The impulse is not appreciable above the level of dullness as it is in the presence of true ascites. The percussion-dullness varies in extent, position, outline and mobility in individual cases and in the same case at different times.

The condition must be differentiated, especially from chronic exudative peritonitis, particularly of tuberculous origin. In both the physical signs develop gradually.

1. Deutsches Archiv für klinische Medicin, vol. lxxx, Nos. 3-4, p. 288.

but the latter is likely to be attended with fever, severe persistent pain and uninterruptedly progressive aggravation, while in the former the signs are variable, with remissions and exacerbations. The former is further characterized by diarrhea, the stools being numerous, often copious and presenting catarrhal features, while the dejections of tuberculous peritonitis are few and thin. Although the physical signs are suggestive of the presence of fluid free in the peritoneal cavity, such a condition is not found on operation or at autopsy. The peritoneum is, as a rule, entirely uninvolved, and solid and cystic tumors are wanting. The phenomena are best explained by the presence of fluid in portions of the intestinal tract whose tone is impaired as a result of catarrhal conditions, and which are at times displaced downward in conjunction with elongation of the mesentery.

THE PHILIPPINE OPIUM REPORT.

The plan recommended for the regulation of the opium traffic in the Philippines, as reported, is one that commends itself. While the government controls the sale, it makes no profit, which relieves us from the reproach justly made against the British Indian Government for its action in this matter. The total abolition of the sale in three years which is provided for will, it is to be hoped, be successfully carried out. Wherever the Chinese abound the opium problem exists, but unfortunately, the evil extends from them to other races. The trouble that the Japanese Government has had with it in Formosa possibly indicates somewhat the difficulties to be met with in the Philippines.[1] But the success they have attained is encouraging for our own authorities. It will be a pity if we can not manage this matter as satisfactorily as do the Japanese.

CUBAN SANITATION.

It is generally understood that the arrangements by which the independence of Cuba was secured included provisions for adequate sanitary measures being adopted by the Cuban authorities to prevent danger of transmission of disease to this country. It appears that difficulties have been experienced, that local authorities refuse to co-operate, and that in some of the interior cities the conditions are far from satisfactory. It is unfortunate for Cuba if it has failed to make provision for central control of sanitation or for such measures as would compel the local authorities to do their duty. If an epidemic of yellow fever or any other tropical infection should be transmitted to us from infected points it would be difficult for the Cuban Government to escape the charge of bad faith and treaty violation. Of course, the greatest danger lies in the principal seaports, and we believe that Havana at least, under the able administration of Dr. Finlay, is in good sanitary condition. There are other places and possibilities, however, which he can not control, and it is to be hoped that whatever is lacking at the present time in other localities will be remedied. Cuba owes it to herself, as well as to this country, to see that the wretched sanitary conditions of the past be not again allowed to develop.

1. THE JOURNAL, April 2, 1904, p. 931.

A FACTOR IN THE ANEMIA OF UNCINARIASIS.

The impetus given to the study of tropical diseases in this country by the acquisition of the Philippine Islands has led to the recognition of the fact that many of the so-called tropical diseases are to be found in the semitropic regions of North America. One of the diseases of this character which is probably very widely distributed in the Southern States, is uncinariasis. The uncinaria has been widely studied, both in the tropics and in the temperate zone, where it produces the so-called tunnel anemia or miner's anemia. A fact which has often been commented on in the various published studies, is the discrepancy which often occurs between the number of parasites and the severity of the anemia. A very severe anemia may exist, and yet very few worms may be present in the intestinal tract. Some recent work of Loeb and Smith[1] seems to explain the manner in which a few worms may cause a grave anemia. These writers have shown that there is present, in the anterior end of the parasite, a substance which has, to a marked degree, the power of inhibiting the coagulation of the blood. It has been known for some time that one worm often makes a series of punctures, and this being the case, it is easy to imagine a considerable loss of blood from each of these if coagulation be retarded.

LIGATION OF THE EXTREMITIES AND AUTO-TRANSFUSION.

Ligation of the extremities by means of elastic bandages applied not too firmly to the thighs and arms has long been known and practiced as a measure for the control of hemorrhage, particularly from the lungs, the object being to check the return of venous blood without interfering with the arterial supply. As a result, the blood pressure falls and bleeding ceases. The opposite conditions are brought about by the application of the bandage from the periphery in a proximal direction, constituting the procedure that has been designated auto-transfusion. Dr. W. Plaskuda[2] reports the results of an investigation undertaken for the purpose of determining experimentally the amounts of blood that can be removed from or supplied to the circulation under the circumstances detailed, and also the state of the blood pressure in the free vessels. He found that from three-quarters of a liter to one and one-quarter liters of blood can be removed from or conveyed to the trunk and the head by ligation or bandaging of all four extremities by means of rubber bands. Marked stasis in three extremities lowers the blood pressure about 20 millimeters of mercury (14 per cent.). The results are somewhat variable and uncertain in nervous individuals. Occasionally, however, states approaching collapse develop in conjunction with sudden and more marked reduction in pressure, but these disappear rapidly when the bandages are released. When anemia is induced artificially in several extremities the blood pressure is decreased, apparently as a result of nervous rather than of mechanical influences.

1. Proceedings of the Pathological Society of Philadelphia, June, 1904.

2. Deutsches Archiv für klin. Med., vol. lxxx, Nos. 5-6, p. 402

BAD SPELLING BY PHYSICIANS.

Among the general criticisms on medical education in this country, one of the chief is that based on lack of preliminary educational acquirements. This has been the subject of many rather severe comments, both in the medical and secular press, as well as in the reports of the state examining boards like that of Pennsylvania. One of the more notable defects of candidates is that of the inability to spell properly, and this is apt to be taken by some as an index of general illiteracy. Nothing appears worse than bad spelling, and yet it seems to be a fact that deficiencies in orthography are more common at the present time, in spite of all the advances that have been made in educational standards, than they were a generation or so back. There must be some defect in modern school methods, and the conviction that this is so appears to be growing. It is possible that the abandoning of oral and syllableizing methods of teaching spelling is largely responsible. The modern plan seems largely to be to educate a visual memory, and this is not necessarily by any means the characteristic of the highest mental development. An experienced teacher remarked that she had noticed that the good mathematicians among her scholars were the poorest spellers. We do not know how general this observation is, but it is at least significant, and it is possible, as the *Maryland Medical Journal* admits, that one may be an accomplished physician and yet a bad speller. We fear that instances of this kind will be more numerous than they should be among physicians of the present generation. We have no desire to excuse bad spelling by physicians, but we would like to say a word in favor of a possible reform in pedagogic methods which may be more or less responsible. Spelling reform of this particular kind, or rather reform of the teaching of spelling, is hardly a medical subject, but it has medico-psychologic bearings that are worthy of attention.

THE INSANITARY FLAT.

Judging from the records of the building department of the city of New York, according to a lay paper, only sixty private houses were erected last year in the whole of Manhattan Island, while the number of apartment buildings erected during the same period reached into the thousands. This record is repeated, to a greater or lesser extent, in all of our large cities, and the building of flats and tenement houses extends also to the suburbs We are becoming less and less a home-dwelling people, and are crowding more and more into what the paper quoted calls "human honeycombs." This may be a normal phase of social evolution. The fact indeed that it occurs so extensively supports this view. It has, however, its threatening side. It is a factor in the much-discussed race suicide which some consider threatening. Children are not favored in these buildings, nor do flats furnish the ideal conditions for their welfare. It is mainly in the lower grade of tenements and in the slums that children abound, and their condition there is a very serious urban sanitary problem. There are, however, other hygienic disadvantages in this concentration of humanity, such as the questions of ventilation and sunlight, which are often seriously restricted and embarrassed in these tenements. It is not in the highest-priced and most luxurious of this class of dwellings that we find the most of these defects, as the rich can provide for themselves, but in the cheaper ones—those which are occupied by the great mass of workers of the intermediate class, the clerks, the professional men, the better class of mechanics. The housing of the poor is a perennial question for philanthropists, but the housing of the middle class has hardly been considered by them, notwithstanding the fact that in our large cities it is becoming more and more a serious question. We have already called attention to this subject, and showed the fearfully insanitary conditions that must exist as regards sunlight and ventilation even in some of the higher-priced flats. We can not expect a healthy people to grow up under such conditions, and if we escape physical degeneration, with the growing tendency toward flat building in our centers of population, it will be through a special Providence—certainly not from causes that we can rationally foresee with our present lights.

THE PRIMARY SEAT OF INFECTION IN FATAL CASES OF TUBERCULOSIS.

It is a matter of no small difficulty to determine the primary seat of infection in many cases of tuberculosis. The age of the lesions can not always be accurately estimated from either their intensity or their extent. The question at issue has, however, distinct practical significance, inasmuch as the prophylactic measures to be instituted must be based on the decision reached. With the view of establishing the relative frequency with which the abdominal and the thoracic viscera respectively are invaded primarily, Dr. J. Odery Symes and Dr. Theodore Fisher[1] have analyzed the postmortem records of 500 cases in which death took place as a result of tuberculosis. They found that, of 102 cases in patients under the age of 12 years, 12 appeared to be definitely abdominal in origin and 57 definitely thoracic in origin, while in 24 there was doubt as to whether the origin was abdominal or thoracic. The primary lesion, it is thought, was possibly situated in bones or joints in 4 cases, in the skin in 1, in the tonsil in 1, while no focus that could be considered primary was found in 3. Between the thirteenth and twenty-fourth years there were 8 cases apparently primarily abdominal, 31 primarily thoracic and 3 of doubtful origin, while between the twenty-fifth and thirty-sixth years the proportion of cases primarily abdominal to those primarily thoracic was as 1 to 9.66, and between the thirty-seventh and the forty-eighth year as 1 to 9.25. Between 48 and 60 there was no case in which the disease was primarily abdominal, and above 60 there was but 1 of this kind and 7 in which the disease was primarily thoracic. In three cases the kidney appeared to be the organ first affected and in two the epididymis. In two fatal cases of Addison's disease the adrenal glands alone were the seat of tuberculosis. From the foregoing observations it appears that during the first twelve years of life tuberculous infection by way of the air passages is four times

1. British Med. Jour., April 16, 1904, p. 884; see THE JOURNAL, May 7, p. 1255.

as common as that by way of the alimentary canal, and the ratio is about the same during the second twelve years, but deaths in hospitals above the age of 12 years can hardly be considered as representing the average causation of death from varieties of tuberculosis for the whole population above that age, because cases of tuberculosis of the lungs are more chronic at that time than at an earlier period of life, and they are not usually admitted to ordinary hospitals. Notwithstanding the exclusion of cases of chronic pulmonary disease from hospitals, the proportion of cases of abdominal to those of thoracic tuberculosis in the institutions from which the data were obtained was exceedingly small after the age of 24.

Medical News.

ALABAMA.

Personal.—Dr. Marvin W. Dupree, Mount Vernon, assistant at the State Hospital for the Insane, has resigned and taken up practice at Athens.

Smallpox.—Dr. William C. Wheeler, Huntsville, health officer of Madison County, reports that there are about 10 cases of smallpox at New Hope, but that they are thoroughly isolated.

Acquitted of Murder.—Dr. John B. Farley, of Farley, Madison County, charged with the murder of Davis Johnston, was acquitted, August 29, after a trial lasting two days. He claimed that he acted in self defense.

Statue to Dr. W. E. B. Davis.—The memory of the late Dr. William E. B. Davis, Birmingham, is to be perpetuated by the erection of a monument by the Southern Surgical and Gynecological Association, of which Dr. Davis was the originator. The statue is being made by G. Moretti, and will be in bronze, 7½ feet high, standing upon a granite pedestal 9½ feet high. He has made an indemnity contract to have the statue ready by December 1 that it may be unveiled at the coming meeting of the association.

ARIZONA.

Typhoid at Douglas.—It is alleged that there are more than 75 cases of typhoid fever in Douglas, and that the condition of the city is inexcusably unsanitary.

Appointed Examiner.—Dr. Charles H. Jones has been appointed a member of the Territorial Board of Medical Examiners, vice Dr. William Duffield, Phoenix, resigned to become superintendent of public health.

Hospital at Bisbee.—Ground has been broken for the new Calumet and Arizona Hospital at Bisbee. The building will contain four wards, private, operating, sterilizing and anesthetizing rooms, and laboratories, and will accommodate 50 patients.

Plague Only a Rumor.—On account of startling announcements regarding "black heart" and "bubonic plague" in and around Bisbee, acting assistant surgeon A. L. Gustettee, U. S. P. H. and M.-H. Service, has made a thorough investigation of the situation and reports that there are absolutely no grounds for the rumors, and that there is no epidemic disease prevalent in Bisbee.

CALIFORNIA.

Personal.—Dr. Rupert Blue, San Francisco, has been elected president of the Public Health Commission of California.——Dr. Joseph D. Davidson, Fresno, returned from Europe, August 24.

Plague on Steamer.—The *Coptic*, which arrived at San Francisco from the Orient, August 29, was sent to the quarantine station on account of the death of a Corean passenger near Honolulu from bubonic plague.

Kitasato in America.—Dr. S. Kitasato, president of the Institute for Infectious Diseases, and of the Serum and Lymph Institutes of the Imperial Government of Japan, arrived in San Francisco, August 29, en route to the Congress of Medicine at St. Lonis.

Made Democratic Elector.—Dr. William M. S. Beede, Stockton, a member of the American Medical Association, Medical Society of the State of California and San Joaquin County Medical Society, who was United States consular surgeon at Hong-Kong from 1896 to 1900, has been nominated as a democratic presidential elector.

Medical Arrangements at Conclave.—The medical arrangements at the triennial conclave of Knights Templar, at San Francisco, were excellent. Dr. Curtis G. Kenyon was chairman of the committee, which maintained headquarters at the Palace Hotel, and an emergency hospital at the Mechanic's Pavilion, a staff of 40 mounted physicians in the parade, and a complete ambulance service.

For the Sick.—St. Vincent Hospital and Medical Association has been incorporated at San Francisco with a capital stock of $75,000 by Drs. Joseph P. Le Fevre, John C. Newton, and others.——The Southern Pacific Railway will establish a hospital at Dunsmuir.——The Los Angeles College Clinic Association has been incorporated without capital stock, by Drs. Joseph Kurtz, William LeM. Wills, H. Bert Ellis, William D. Babcock and Granville MacGowan. The purposes of the association are to establish and conduct a hospital and dispensary for the treatment and care of the indigent sick and injured persons; to treat emergency cases and such other sick and injured persons who may be or become a charge upon the city; to conduct and maintain an institution for instructing, educating and training men and women in the sciences of medicine and surgery.

DELAWARE.

Nominated for Governor.—Dr. Joseph H. Chandler, Centreville, has been nominated for governor on the Republican ticket.

Ohio Hospital Incorporated.—Papers of incorporation have been filed in Wilmington for the Marion (Ohio) City and County Hospital Company, with a capital stock of $50,000.

The Chandler Dinner.—At the twelfth annual dinner to the medical profession, and the Dr. Chandler Medical Club of Delaware, held at the home of Dr. Joseph H. Chandler, in Centreville, the address of welcome was delivered by Dr. Swithin Chandler, Philadelphia, papers were read by Drs. Hobart A. Hare, William L. Rodman, John G. Clark, John H. Musser, Henry Boenning, and W. M. L. Coplin, Philadelphia, a paper was read also by Dr. A. Robin, Wilmington, and a poem by Dr. James H. Morgan, Wilmington.

DISTRICT OF COLUMBIA.

Ordered to Chair of Tropical Diseases.—Medical Director Phillips A. Lovering, U. S. Navy, has been ordered from the Asiatic Station to Washington, to assume the new chair of tropical diseases, in the Naval Medical School.

The Year's Deaths.—The mortality per 1,000 in the District was 20.14 for 1903, while for 1902 it was 19.99. The increase occurred during January, February, March, November and December; was altogether among the white population; was chiefly between the ages of 65 and 69; and was chiefly due to diseases of the nervous and circulatory systems and to violence.

Woodward Not Convinced.—Dr. William C. Woodward, health officer of the District, despite the suggestion of the Agricultural Department that copper sulphate be used in the public reservoirs as a disinfectant, is not convinced, believes the matter is still one of experiment, and is not sure that instead of typhoid fever prevention, copper poisoning might result from the use of this substance in the drinking-water supply of Washington.

GEORGIA.

Personal.—Dr. Ludwig Amster, Atlanta, has returned from Europe.——Dr. E. G. Adams, Greensboro, has been appointed resident physician at the Presbyterian Hospital, Atlanta.

Fined for Cocain Selling.—Dr. Millard B. McAfee, Atlanta, charged with the illegal sale of cocain to negroes, who admitted on trial that he had written 80 prescriptions for cocain in a single day, was fined $100 and bound over to the city court under a $200 bond, August 23.

Tuberculosis Board Named.—On August 31 the governor named as a medical commission on tuberculosis: From the state at large—Drs. Charles Hicks, chairman, Dublin; Louis H. Jones, Atlanta; Ernest P. Ham, Gainesville; Palarmon T. Hillsman, Albany; Joseph R. Burdette, Tennille; Pryor W. Fitts, Greenville; S. A. Brown, Dalton; L. G. Hardman, Commerce; Loyd J. Belt, Millen, and John L. Walter, Waycross. From the congressional districts—1, Dr. Eugene R. Corson, Savannah; 2, Dr. O. B. Bush, Camilla; 3, Dr. Alexander

Mack, Hawkinsville; 4, Dr. Henry R. Slack, La Grange; 5, Dr. Bernard Wolff, Atlanta; 6, Dr. George L. Alexander, Forsyth; 7, Dr. Thomas R. Garlington, Rome; 8, Dr. Henry E. Thornton, Hartwell; 9, Dr. Jefferson Davis, Toccoa; 10, Dr. Thomas D. Coleman, Augusta, and 11, Dr. S. E. Sanchez, Barwick.

ILLINOIS.

Personal.—Dr. Amos F. Moore, Dixon, has been appointed district surgeon for the Chicago and Northwestern Railway, vice Dr. Henry E. Paine, deceased.

Brutal Assault.—Dr. Henry E. Lightfoot, Carbondale, was attacked by unknown individuals, August 20, struck on the head with a blunt instrument and rendered unconscious.

Smallpox.—At Belleville 9 new cases were reported, September 8. Strict quarantine regulations were ordered to be maintained.——Centralia has had 13 cases, and believes the spread of the disease has been checked..

Arranging for State Society.—The profession of Rock Island is already organizing for the comfort and entertainment of the Illinois State Medical Society, which is to meet in Rock Island in May next. Dr. Carl Bernardi has been made chairman of the committee of arrangements; Dr. George G. Craig, vice-chairman, and chairman of the reception committee, and Dr. Frank H. First, secretary-treasurer. Dr. William H. Ludewig is chairman of the committee on advertising and invitation; Dr. J. R. Hollowbush, entertainment; Dr. B. F. Hall, hotels, lodgings and halls; Dr. St. Elmo M. Sala, exhibits; Dr. Joseph D. Silva, finance; Dr. Emily Wright, entertainment of ladies, and Dr. Shelley B. Hall, transportation.

Chicago.

Semon in Chicago.—The Chicago Laryngological and Climatological Society gave a dinner in honor of Sir Felix Semon, at the Chicago Club, September 15.

A Correction.—Dr. Vida A. Latham writes that she was elected vice-president of the American Microscopical Society, and not secretary, as stated in THE JOURNAL of September 3. Dr. Robert H. Wolcott, of the University of Nebraska, was elected secretary.

Children Have Smallpox.—The spread of smallpox among children is causing grave concern to the department of health. On September 10, four children were taken to the Isolation Hospital, and one little patient died there. There are now 15 patients in the hospital.

Personal.—Dr. Olander E. Wald has been appointed chief surgeon of the Bethesda Hospital.——Drs. Arthur D. Bevan and James Chvatal have been nominated on the committee to represent Chicago at the Louisiana Purchase Exposition, on "Chicago Day," October 8.——Dr. Joseph Z. Bergeron has returned from Europe.

Death-Rate Continues Low.—For the week ended September 10, 443 deaths were reported, 48 less than for the previous week, and 61 less than for the corresponding week of 1903, the respective annual rates per 1,000 being 11.98, 13.27, and 14.02. Acute intestinal diseases caused 97 deaths; consumption, 49; violence, 45; and heart disease, 35.

KENTUCKY.

Smallpox has appeared in Mayfield, where there are four cases in one family, and among the negroes near Pembroke, where four cases have been discovered.

Stringent Rules Adopted.—The State Board of Health has adopted stricter rules, requiring examination of physicians of other states desiring to practice in Kentucky; limiting medical colleges to cities of 50,000 or more population; prohibiting medical colleges from having more than one school term a year, and requiring preliminary examination of all prospective medical students.

One Year's Deaths in Louisville.—Dr. Maverell K. Allen, health officer of Louisville, reports that during the year ended August 31, 4,092 deaths occurred, a death rate of 17.56 per 1,000. The rate among white people was 15.2 per 1,000, and among the colored population, 27.4. Tuberculosis caused 562 deaths; pneumonia, 467; heart disease, 284; violence, 182; Bright's disease, 167; cancer, 125; apoplexy, 145; typhoid fever, 112, and meningitis, 100. September, June, July and August were the months of greatest mortality.

Personal.—Dr. Joseph M. Ferguson, South Carrollton, has been appointed second assistant physician at the Western Kentucky Asylum for the Insane, vice Dr. James W. Stephens, transferred to the Central Kentucky Asylum, Lakeland.——Dr. William N. Offutt, Lexington, has been made captain and assistant surgeon of the Second Kentucky Infantry, vice Dr. William J. Foley, Lexington, made regimental adjutant.——Dr. James M. Mathews, Louisville, has been appointed a member of the International Commission of Awards at the World's Fair, St. Louis.

MARYLAND.

Nominated for Congress.—Dr. Richard S. Hill of Prince George's County has been nominated for Congress. He is a graduate of Georgetown University Medical School, and is at present a member of the Maryland House of Delegates.

Answer to Mandamus Suit.—In its answer to the suit for mandamus brought against it by Dr. Campbell F. Flautt of Baltimore, the State Board of Medical Examiners denies that Dr. Flautt is entitled to a license to practice, and avers that on two occasions (in 1901 and 1902) he failed to pass the examination. While admitting that Dr. Flautt graduated from the Baltimore Medical College in 1901, it denies that he was a physician or surgeon lawfully practicing in Maryland prior to Jan. 1, 1898. It claims it has no authority to issue a license to persons whose sole right to practice medicine rests on the irrelevant fact that they "had practiced medicine and had in their professional capacity and within a year prior to Jan. 1, 1898, treated 12 persons." The only persons entitled to a license to practice medicine in Maryland under Section 72, Article 43, of the code, it is claimed, are those who have passed the required examinations, and physicians from other states.

Baltimore.

Personal.—Drs. Hugh H. Young, William A. Fisher and Richard H. Follis have gone on a week's trip to Manassas, the Valley of Virginia, and the University of Virginia.

Want City to Maintain Beds.—A committee from the Baltimore University Hospital called on the mayor, September 1, to request that the city contract with that institution for free beds for public patients. The Supervisors of City Charities, to whom the matter was referred by the mayor, have not maintained city beds in that hospital for a considerable time.

Honor Dr. Remsen.—The Society of Chemical Industry, meeting in New York City last week, paid a high tribute to Dr. Ira Remsen, President of Johns Hopkins University, by awarding its medal to him. This medal was founded in 1896, and is awarded every two years for conspicuous service rendered to applied chemistry, by research, discovery, invention, or improvements in processes. Probably the most noteworthy discovery made by Dr. Remsen was saccharin, discovered in his laboratory in 1879. His "Chemistry" has been translated into German, French, Italian and Japanese, and is used in colleges in all those countries, and in nearly every college and university in America, and his "Organic Chemistry" is also well known.

NEBRASKA.

Personal.—Dr. George W. Ira, for eighteen years agency physician at the Santee Indian Reservation, Knox County, is about to move to Lynch, Boyd County.

Hospital for Falls City.—Drs. Frank C. Wiser and Isaac M. Houston, Falls City, have equipped a 28-room building as a hospital, to be known as Mercy Hospital, and to be open to all reputable practitioners.

Dr. Orr Married.—On September 7, at Grinnell, Iowa, Miss Grace Douglass of that city was married to Dr. H. Winnett Orr, Lincoln, editor of the *Western Medical Review*. They will be at home at 1114 H. Street, Lincoln, after October 1.

Fined Because Not Registered.—Dr. Nils P. Hansen, Oakland, arrested on charges filed by Isaiah Lukens, Tekamah, for the illegal practice of medicine, was found guilty as charged, and fined $50. He had neglected to file his registration with the county clerk, as required by law.

NEW YORK.

Typhoid at Jamestown.—An epidemic of typhoid is reported from Jamestown.

Buffalo Voyagers.—Dr. A. L. Benedict has sailed for a short sojourn in Europe.——Drs. W. Scott Renner and Frederick J. Barrett have returned from Europe.

Hospital Charges Dismissed.—The State Board of Charities has dismissed the charges against the physicians of the Sydenham Post-Graduate Course and Hospital on the grounds that this institution does not receive public funds, and, therefore, can not be under its jurisdiction.

Hydrophobia at Ithaca.—About two weeks ago a rabid dog ran about in Ithaca, biting several animals. The veterinary department of Cornell University inoculated a number of guinea pigs with the saliva of the rabid dog, and successfully. A number of people have been bitten by these animals, but so far only three cases of hydrophobia have developed.

Incubators at Coney Island.—Because of the charges recently made against the baby incubator system at the St. Louis Fair, Arthur M. Bishop, president of the New Jersey State Society for the Prevention of Cruelty to Children, in company with several superintendents of state and local institutions, inspected the incubators at Coney Island. They expressed themselves as being satisfied.

High July Death Rate.—The State Department of Health reports a total of 12,061 deaths for July, equivalent to an annual death rate of 18.5 per 1,000. The deaths were 601 above the average of July for the last five years. The increase was mainly due to four causes: Acute diarrheal diseases, diseases of the digestive system, diseases of the nervous system and violence. Of all deaths, 53 per cent. were of children under five.

New York City.

Sale of Carbolic Acid Restricted.—An amendment to the sanitary code has been adopted restricting the sale of carbolic acid in concentrated form and compelling druggists to dispense a 5 per cent. solution only.

Hebrew Convalescent Home.—Initial steps have been taken toward the organization of the Hebrew Convalescent Home Association. It is proposed to buy a tract of land in Westchester County for the erection of an edifice for this purpose.

A New Office for the Bronx.—The rapid increase of population in this locality and the recent typhoid scare have made more effective sanitary work necessary, and Dr. Charles F. Spencer has been appointed chief inspector of contagious diseases in the district.

Contagious Diseases.—There were reported to the sanitary bureau for the week ending Sept. 3, 1904, 200 cases of diphtheria, with 28 deaths; 70 cases of scarlet fever, with 5 deaths; 57 cases of measles, with 3 deaths; 334 cases of tuberculosis, with 162 deaths; 118 cases of typhoid fever, with 13 deaths; and 10 deaths from cerebrospinal meningitis.

Personal.—Dr. James C. Hallock, a retired physician, was assaulted and received a serious scalp wound while sitting in Prospect Park.——Dr. Martin Auspitz, while driving a patient home from his office, collided with an electric car; the patient sustained a fracture of the skull; a boy stealing a ride was killed, and Dr. Auspitz was painfully injured.

OHIO.

Accidents.—Dr. Oliver A. Price, Cincinnati, while visiting in Columbus, August 28, was thrown from an electric car, sustaining a compound fracture of the right leg, and dislocation at the ankle joint.——Dr. Le Grand Gribble, Pomeroy, was accidentally wounded while shooting in Bedford Township, August 30.

Medical Library for Akron.—In memory of his father Dr. H. M. Fisher of Akron, his son Frank T. Fisher, New York City, has donated to the Summit County Medical Society his father's medical library to become a part of the Akron public library, and to be known as the "H. M. Fisher Medical Library." Mr. Fisher promises in addition to give $100 a year for the purchase of new books.

Cincinnati Personal.—Dr. Charles A. L. Reed, who has spent the last three months in Europe, has returned home.——Dr. Earl H. Bruns, resident surgeon of Cincinnati Hospital, has passed his examination for entrance to the Medical Corps of the Army, and will leave for Washington, October 1, for an eight months' course in the Army Medical School.——Dr. and Mrs. J. C. Culbertson have returned from Georgian Bay.

Staff for New Hospital.—The following have been named as the staff for the new Springfield Hospital, which is to be opened next month: Surgical—Drs. Read L. Bell, William B. Patton, Robert C. Rind, and Louis L. Syman; medical—Drs. Jay D. Thomas, George F. Brubaker, Clinton M. Hiestand, Stanley R. Hutchings, Charles W. Evans, and Noah Myers; eye and ear—Drs. Charles L. Minor and John C. Easton; obstetrical—Drs. John M. Buckingham, William A. Smith, and Clarence S. Ramsey; diseases of children—Dr. D. King Gotwald; nervous diseases—Dr. Clarence H. Kay; genitourinary diseases—Drs. Henry Baldwin, Jr., and Ira E. Seward; pathologist—Dr. Frank P. Anzinger; skiagrapher—Dr. Emory F. Davis, and consulting staff—Drs. Ezra C. Harris, John P. Dugan, Bennetta D. Titlow, Allen H. Vance and D. Walter Spence.

OREGON.

Personal.—Dr. James F. Bell has been appointed to fill the place in the Portland Board of Health made vacant by the death of Dr. William H. Saylor.——Dr. Thomas M. Henderson, Pendleton, has been elected coroner of Umatilla County.

Medical Building for Willamette.—There is urgent need for a special building for the medical department of Willamette University, Salem, and it is estimated that the building will cost $17,000. Already two subscriptions, one of $2,500 and the other of $1,000 have been made toward the building fund.

Medical Board Election.—At the annual meeting of the State Medical Board the following officers were elected: President, Dr. Walter E. Carll, Oregon City; Dr. Byron E. Miller, Portland, secretary, and Dr. Angus B. Gillis, Salem, treasurer. Dr. Andrew C. Panton, Portland, was appointed a member, vice Dr. William H. Saylor, deceased.

Oregon State Medical Society.—The thirty-first annual meeting of this society was held in Portland August 30 and 31. About two hundred physicians were in attendance and the program was of unusual interest. In addition to the papers presented by the profession of the state, Dr. Charles H. Mayo, Rochester, Minn., presented a paper on "Cancer of the Large Bowel." Dr. Walter C. Williamson, the president, entertained the members of the society at an informal reception and smoker at his residence, and the City and County Medical Society of Portland were hosts at a banquet at the Hotel Portland on the second evening. The following officers were elected: Dr. George F. Wilson, Portland, president; Drs. Mae H. Cardwell, Portland, William H. Boyd, Salem, and William L. Wood, Portland, vice-presidents; Dr. Luther H. Hamilton, Portland, secretary; Dr. Jessie M. McGavin, Portland, treasurer, and Drs. R. C. Coffey and Henry W. Coe, Portland, councilors. Dr. Kenneth A. J. MacKenzie, chairman of the committee of arrangements for the reception of the American Medical Association, to be held in Portland in 1905, has named the following committee to assist him in his work: Drs. Henry W. Coe, William Jones, Andrew C. Smith, George F. Wilson, Andrew J. Giesy, and Ernest F. Tucker, all of Portland.

PENNSYLVANIA.

Dr. Lampman's Will.—The will of the late Dr. John S. Lampman, Wilkesbarre, devises the entire estate, valued at $39,500, to his wife, and on her decease, to his two sons.

Reception to Surgeon-General Weaver.—The physicians of Norristown gave a reception and banquet, September 6, in honor of Dr. Joseph K. Weaver, who was recently appointed surgeon general of the National Guard of Pennsylvania.

Typhoid Still Dominant.—Of 21 cases of contagious diseases reported at Pittsburg, September 4 and 5, 15 were typhoid fever, and of 16 cases reported September 6, 7 were of this disease. In the week ended August 27, 73 of the 113 deaths were due to typhoid fever.

Texas Fever.—A large number of the cattle received from the west in the stockyards of Chester and Lancaster counties have been found to have Texas fever, and a large number of deaths have occurred. The disease has spread rapidly throughout these counties, and is recently reported in Berks County also.

Personal.—Drs. Frederick H. Bloomhardt and Charles F. McBurney have resigned from the Altoona Board of Health.——Dr. Daniel Webb has been appointed to the surgical staff of Lackawanna Hospital, Scranton, vice Dr. Alexander J. Connell, chief-of-staff, resigned, and Dr. Addison W. Smith has succeeded Dr. William G. Fulton, who has been made a trustee. Dr. Reed Burns has been appointed chief of the surgical staff.

Philadelphia.

Dr. Eshner Married.—Announcement cards have been received of the wedding of Dr. Augustus A. Eshner to Miss Julia Friedberger, which occurred September 7. Dr. and Mrs. Eshner will reside at 1019 Spruce Street.

Personal.—Dr. Alexander C. Abbott, chief of the bureau of health, and professor of hygiene in the University of Pennsylvania, will deliver the inaugural address at the formal opening of McGill University, Montreal, September 12.——William Krusen has returned from Europe.

Health Report.—Typhoid fever still prevails throughout the city, but the number of cases reported for the week was lessened. The death rate from the disease, however, is slightly higher. There were 100 cases of typhoid, with 14 deaths, reported for the week, as compared with 104 cases, and 10 deaths, for the preceding seven days. This city has more typhoid fever than any of the other large American cities. There were 400 deaths reported for the week ended September 10, as compared with 371 for the previous week, and 370 for the corresponding period of last year, and 379 for the corresponding week of 1902.

August Hospital Work.—During August there were admitted to the wards of the Pennsylvania Hospital 342 patients, and 2,730 emergency cases were treated in the receiving wards. There were 5,018 cases treated in the out-patient department, and the total visits made to the out-patient department numbered 7,566.——In the Germantown Hospital 121 patients were admitted, and 1,529 patients were treated in the dispensary. ——The Methodist Hospital admitted 68 patients to the wards and 830 patients in the different dispensaries. The total visits made to the dispensary numbered 3,184.——In the Women's Hospital 1,549 patients were treated in the different clinics.——There were 184 patients admitted to the wards of St. Agnes' Hospital, and 696 new cases and 2,582 old cases were treated in the various dispensaries.——In St. Mary's Hospital 171 patients were admitted and 3,054 patients were treated in the dispensary.

GENERAL.

Beri-Beri.—According to a newspaper report, the bark *Foo Suey*, from Honolulu, which arrived at Delaware breakwater recently, was found to have several cases of beri-beri on board. One man died at sea from the disease. The vessel was quarantined.

Medical Missionaries Wanted.—Mrs. B. F. Witt, Dayton, Ohio, secretary of the Woman's Missionary Association, asks us to call attention to the fact that the above association is in need of medical missionaries for Canton, South China. Either man or woman, married or single, will be accepted if found satisfactory. A woman physician is also needed for Jubbulpore, Central India. The position is under the auspices of the Methodist Episcopal Woman's Foreign Missionary Society. Further particulars can be obtained by communicating with Miss Nettie M. Hyde, Clifton Springs, N. Y.

Professor Orth.—Dr. Johannes Orth arrived in New York, September 5, en route to St. Louis. He is to be entertained at the White House by the President, September 27, and a dinner will be given him, probably in New York, by his former pupils about October 3. Dr. Orth is professor of general pathology and pathologic anatomy at Berlin, and is also dean of Berlin University. He was formerly assistant to Rindfleisch and later to Virchow, until called to be professor of general pathology at Göttingen in 1878. He succeeded to Virchow's chair in Berlin and also to the editorship of *Virchow's Archiv*.

The Weightman Fortune.—The *Medical News*, in referring to the death of William Weightman, head of the firm of Powers & Weightman, drug manufacturers of Philadelphia, has revived the story of how the greater part of the immense fortune of the firm was derived from the sale of quinin during the Civil War. At that time, the only two firms in the country making quinin from Peruvian bark were Powers & Weightman and Rosengarten & Sons, both of Philadelphia. The regular price of the drug at the beginning of the war was $2.10 an ounce, and south of Mason & Dixon's line it was often sold as high as $15.00 an ounce, but the Philadelphia firms, although having a monopoly of the drug, never sold it for exorbitant prices. They made money rapidly, although the government purchased great quantities abroad.

Another State Society Journal.—One of the most encouraging signs in the way of organization of the profession is the doing away with the old transactions, which came out once a year, and in the majority of instances were not even opened, and the substitution therefore of the monthly journal. Among the latter, we welcome the *Journal of the Medical Society of New Jersey*, No. 1, of Vol. 1, having just been received. It has adopted as its title page one similar to that of the *Journal of the Michigan State Medical Society*, which in turn copied the general style of THE JOURNAL of the American Medical Association. The first issue of the New Jersey Journal is a very creditable one, and promises to be of much value to the profession of the state. The editor is Dr. Richard C. Newton of Montclair. There are now thirteen state societies that are journalizing their transactions, namely: Arkansas, California, Colorado, Illinois, Kansas, Kentucky, Michigan, Mississippi, Missouri, New Jersey, New York, Pennsylvania, and Wisconsin.

CANADA.

The Canadian Medical Protective Association held its annual meeting in Vancouver, B. C., August 24. Dr. Robert W. Powell, Ottawa, was re-elected president and Dr. James A. Grant, Jr., Ottawa, was elected secretary-treasurer.

Toronto General Hospital.—There were 220 patients in the wards on July 31, and 211, not including infants, on August 31. During the month 250 were admitted, 243 discharged and 16 died. During the month 247 accident cases received first-aid at the emergency branch of the hospital.

The British Columbia Medical Association held a business meeting at Vancouver, August 24, and elected the following officers for the ensuing year: President, Dr. W. D. Brydone-Jack, Vancouver; vice-president, Dr. Edward C. Hart, Victoria; secretary, Dr. H. E. Langis, Vancouver, and treasurer Dr. J. S. Helmcken, Victoria. It was decided to hold the next meeting in Vancouver.

Montreal Vital Statistics of 1903.—The vital statistician's report for 1903 shows an increase in the birth, marriage and death rates. The death rate increased from 22.58 per 1,000 in 1902 to 24.29. The birth rate increased from 35.65 to 36.08 per 1,000, while the marriage rate increased from 9.22 to 10.16 per 1,000. The increase in the two latter rates may be due to the fact that sermons were preached in the Roman Catholic and other churches about two years ago against the falling-off in the birth and marriage rates.

Vaccination in Montreal.—From August 15 until September 3 the vaccination bureau in Montreal was kept open daily to provide for the vaccination of all unvaccinated children who are to attend the schools during the coming terms. This was in accordance with the recent by-law adopted by the Montreal City Council, which reads as follows: "No parent or guardian, no commissioner, trustee or other person shall allow any pupil under his guardianship or control to frequent any school, college, convent, university or any other educational institution in Montreal, unless such pupil shall be provided with a certificate of effective vaccination."

Medical Inspection of City Schools in the Province of Quebec.—The provincial Board of Health of Quebec met recently in Montreal and discussed the high death rate among young children in that city. The board approved of the institutions established in Montreal to give advice regarding the care and feeding of babies, and believed that they would be a great assistance in spreading a knowledge of infant hygiene. The board will have prepared small booklets for instruction of mothers on the care of new-born children. Regarding the question of pure milk, the board adopted a resolution asking that municipal health departments make a chemical and bacteriologic examination of milk supplies from time to time, especially in the summer months. The board also gave its entire approval to the medical inspection of schools, and will ask the Legislature of Quebec to enact a law which will permit municipal authorities or school commissioners to make a complete inspection, as approved by the congress of the Association of French-speaking Physicians. A resolution will shortly be adopted to prohibit expectorating on sidewalks.

Canadian Medical Association.—The thirty-seventh annual meeting of the Canadian Medical Association was held at Vancouver, B. C., August 23-26, and proved one of the most successful and largest meetings in the history of the organization, there being registered 266 physicians. The address in surgery was delivered by Dr. Mayo Robson, and was accompanied by a lantern demonstration; that in medicine was delivered by Dr. Robert E. McKechnie, Vancouver, and that in gynecology by Dr. E. C. Dudley, Chicago, and this was also accompanied by a lantern demonstration. The election of officers resulted as follows: President, Dr. John Stewart, Halifax, N. S.; vice-presidents, Drs. Peter MacLaren, Montague Bridge, P. E. I., Judson B. Black, Windsor, N. S., Alfred B. Atherton, Fredericton, N. B., Joseph E. Dube, Montreal, Harry Meek, London, Ont., W. S. England, Winnipeg, Man., Henry C. Wilson, Edmonton, N. W. T., and Richard E. Walker, New Westminster, B. C.; local secretaries, Drs. Henry D. Johnson, Charlottestown, P. E. I., Guy C. Jones, Halifax, N. S., Thomas D. Walker, St. John, N. B., John D. Cameron, Montreal, Alexander Stewart, Palmerston, Ont., Samuel W. Hewetson, Pincher Creek, N. W. T., Popham, Winnipeg, and

Alexander S. Monro, Vancouver, B. C., and executive council, Drs. George M. Campbell, James Ross and C. Dickie Murray, all of Halifax, where the 1905 meeting will be held. Dr. George Elliott, Toronto, was re-elected general secretary and Dr. H. Beaumont Small, Ottawa, treasurer. In 1906 it is expected that a conjoint meeting of the Canadian and the British Medical associations will be held in Toronto.

FOREIGN.

Pensions for Physicians Victims of Epidemics.—One of the edicts enacted by the Czar since the birth of his son is one to the effect that the families of physicians are entitled to a pension when the physician succumbed to infection acquired while in the public service fighting an epidemic.

Enterprise in Medical Society Work.—The physicians and surgeons now stationed or voluntarily serving at Harbin have organized what they call the "Temporary Medical Association in the Far East." At the first meeting, held in August, 96 physicians were present. Dr. Tolmatschew from Moscow is the president.

Russian Physicians at the Front.—The Russian Red Cross has appealed for a list of physicians volunteering to serve at the front to take the place of the physicians and medical students worn out or sick from their service with the Red Cross in the field. Dr. Böttcher has typhoid fever, and Dr. Hildebrand had his foot crushed and was the first patient to be treated in the hospital in his charge.

Waldeck-Rousseau and the German Surgeon.—Considerable surprise has been expressed that Kehr should have been summoned from Germany to operate on Waldeck-Rousseau, who did not survive the day. The facts of the case are that Professors Poirier and Terrier of Paris had performed an operation for biliary obstruction a month or so before, discovering then indications of inoperable malignant disease in the pancreas. The patient's condition was very much improved by the intervention, but the family were warned that the improvement could be only temporary. When the threatening symptoms recurred the French surgeons refused further interference, and as a last resource Mayo Robson and Kehr were summoned. Kehr performed a laparotomy, and found ablation of the tumor impossible, although he was able to conclude with drainage of the hepaticus. The patient did not regain consciousness, and died in a few hours. The French now criticise Kehr for even attempting the operation under the circumstances.

Law in Regard to Prescriptions in Brazil.—A new sanitary law for Brazil is under discussion. The medical society of S. Paulo suggests that every pharmacist shall be supplied with a list of registered physicians, and that they should be compelled to refuse to dispense prescriptions signed by any one else. It is recommended that the original prescription shall not be dispensed again after a year has elapsed from the date of writing. No prescription can be dispensed a second time without an order from the physician who wrote it. Medicolegal testimony experts should be selected exclusively from the list of registered physicians. B. Rodrigues advocated that the government should purchase large supplies of the disinfectants needed in the prophylaxis of epidemics and keep them on hand ready for emergencies. When needed, they should be sold to consumers at cost. At present the prices soar as soon as an epidemic is declared, placing them beyond the reach of the majority. The expense to the state would be compensated by the benefits resulting. Every cent spent in hygiene is an economy, he added. He also added that the public authorities should set the example of abolishing dry sweeping in all the public buildings, and avoidance of dust by wiping furniture, etc., with cloths moistened with antiseptics. Example would be worth a thousand precepts.

Gloves, Etc., in Field Surgery.—Dr. Hohlbeck writes from the seat of war that the Russian surgeons are adopting Zoege von Manteuffel's advice to use gloves in field surgery. They find them very convenient for applying dressings in severe cases and for operations of all kinds, carrying a supply constantly with them, each pair sterilized in a separate bag. He mentions the great benefit derived from Senn's adhesive plaster fastenings for dressings. This, with the smallness of the wounds made by the bullets, reduces the amount of dressings to the minimum, so that one small package will serve for an astonishing number of wounded. The means of transporting the wounded, according to Hohlbeck, are deplorable, the native carts are so clumsy and too short to lie down in. The carts supplied by the Red Cross are fine. They are such as are used in Finland, and have proved so useful that a large consignment has been ordered. The penetrating dust and the millions of flies are the chief enemies of the surgeon. The wounds made by the shrapnel balls are the most serious. Each bomb contains about 260 balls, and the injuries made by them have all the disadvantages of the old lead bullets. The other bombs are much less dangerous. They explode with such force that they fly into such small pieces that the damage inflicted is comparatively slight. The wounds made by the Japanese bullets are less serious than those of the Lee-Metford or Mauser bullets as he observed them in the Boer war. They can even pass through the shaft of a bone without solution of continuity. Dr. Hohlbeck's letters are being published in the *St. Petersburger med. Wochft.*

The Father of Anatomy.—Vesalius has been regarded as the father of scientific anatomy, his work "Fabrica," dating from 1543, being styled the first treatise on the subject conceived in a scientific spirit. A year or so ago Jackschath arose in Austria and proclaimed that Vesalius had been preceded in this line by Leonardo da Vinci, who, fully fifty years before him, had composed a treatise on anatomy which has since been lost. Nothing of this treatise has come down to us except a few students' notes and plates. They show, however, that to da Vinci (1452-1519) unmistakably belongs the title of the father of anatomy. They also show further, he states, that Vesalius' work is merely a compilation of da Vinci's treatise and that his appropriation of it and publication of it over his own name is the most stupendous example of plagiarism the world has ever known. A French edition of what remains of da Vinci's work was published three years ago, and the mistakes made by the author are the same mistakes as are found later in Vesalius' work. In a recent number of the *Münchener medicinische Wochenschrift*, No. 18, G. Klein reviews the history of the subject. Although he does not think that Jackschrath has quite proved his case in regard to Vesalius' plagiarism, yet late researches have certainly established that to da Vinci and not to Vesalius belongs the title of father of anatomy.

Koch and His Critics.—When Koch was presented with the *Festschrift* in honor of his sixtieth birthday, and the portrait bust was unveiled, he expressed great appreciation of the homage, especially of its timeliness. He remarked: "The good old days of bacteriology are past, when a few investigators had the field to themselves and could work in peace along their various lines. Now their name is legion, and every one of them is striving to win some small modicum of success. No one has a free field to himself any longer, and even with the most cautious limitation of one's field of work one finds that he is encroaching on another's domain, or stepping on still another's toes, or jostling some one in some way. Before the scientist knows it, he has made a host of enemies on all sides. This is naturally very unpleasant and robs one of all peace and joy in one's work." Koch continued with the statement that he had been particularly unfortunate in this respect; whatever he writes or says raises a storm of passionate contradiction. It generally comes from those who understand little or nothing of the matter in hand and are the least qualified to pass judgment on it. He has frequently been tempted to abandon the whole thing and have nothing more to do with science. This homage offered to him on his sixtieth birthday, showing such a large and loyal band of co-workers, is an inspiration to keep on working, and he terminated with the promise to continue to devote his energies in the future as in the past to work with and for these loyal friends, to promote the cause of science by every means in his power. Von Behring was at one time a pupil of Koch, and his absence from the celebration excited some comment.

Wounds from the Japanese Firearms.—The Japanese bullets used at the battle of Vafangou were an inch and a quarter long and a quarter of an inch in diameter. A detailed report from one of the Russian surgeons of his work after the battle states (in the *Russkii Vratch*, iii, No. 30, July 24, 1904) that these bullets passed through bone and tissue without shattering them, merely making a tunnel the size of the bullet. His hospital was located at Tielen, more than 200 miles from the battlefield, and the 150 wounded men arrived by train, all but a few having walked from the scene of action to the nearest railroad station, a distance of 20 to 30 versts (nearly 14 to 20 miles). All arrived the second day after the battle in satisfactory condition, none thinking that his wounds were serious, although in some of them the bullets had traversed vital regions. Only 5 required operative intervention; in 4 the bullet

was extracted under cocain; one was a shrapnel ball. In another case crushed fingers were amputated. Treatment was limited to thoroughly cleansing the wound and putting it in the best condition for natural repair. Four cases are described in which the bullet passed through the thorax. In one the bullet entered below the right seventh rib and emerged in the ninth interspace. The man was standing about 500 paces from his assailant. He did not fall, but hastened on foot to the railroad station, more than 13 miles away. There was no hemorrhage, and merely slight difficulty in breathing. Slight fever was observed for three days after arrival, but by the eleventh day all the symptoms had vanished except that the breathing in the lower lobe of the right lung was not so strong as in the other lung. The patient felt quite well. Another was hit at about 800 paces, the bullet emerging in the tenth interspace. He experienced merely a slight difficulty in breathing and repaired to the station on foot, finding that an attempt to ride in a wagon made him feel worse. The lung action was apparently normal; there was no fever, and the patient felt perfectly well by the end of the second week. There was some suppuration of wounds of the abdomen or mouth, but healing proceeded rapidly. The surgeon in question, J. B. Zeldovitch, comments on the courageous bearing and good humor of the wounded, their expressions of admiration for the valor of the foe and the lack of revengeful feelings.

Correspondence.

Physicians in the Public Life of France.

PROFESSOR POZZI—COMBES A PHYSICIAN—COMPOSITION OF THE FRENCH SENATE—THE CHAMBER OF DEPUTIES—PHYSICIANS IN MINOR CIVIL OFFICES—SCIENTIFIC RECORDS, PROFESSIONAL AND PERSONAL STANDING OF PHYSICIANS IN PUBLIC LIFE—SOME NEGLECTED BUT PRESSING DUTIES OF AMERICAN PHYSICIANS.

PARIS, Aug. 27, 1904.

To the Members of the Medical Profession:—The active participation of the medical profession in public affairs in France is in striking contrast with the aloofness of American physicians from executive and legislative offices. This was brought to my attention by Professor Pozzi, with whom it was my good fortune to cross the ocean on his return from the meeting of the American Surgical Association at St. Louis. He himself is an example of the highest type of the medical man, using the term in its broad generic sense. A successful practitioner, the author of an accepted text-book of gynecology which has been translated into all the European languages, a literateur and scientist in a broader sense, having been the translator of Darwin into French; a member of the Academy of Medicine, a popular professor in the Ecole de Médicine, an officer of the Legion of Honor, an active participant in the Franco-Prusssian war, he has held several minor civil offices and, lastly, has had one term as a senator of France. Yet he is only in the prime of manhood! His example, it is hoped, will be as generally emulated in America as it is imitated, consciously or otherwise, in France. When I told him that there were but two physicians in the United States Senate and none in our House of Representatives of the United States he was greatly surprised.

"Why!" he exclaimed, "in France medical men are not infrequently the controlling factors in both the Senate and Chamber of Deputies! Out of the more than 600 members in both branches it is not unusual to have from 100 to 125 representatives of our profession."

"What about their politics?" I asked.

"They are chiefly Republicans, most of them belonging to the 'Republican-Radical' branch of the party; only a few are classified as 'Republicans' and 'Moderate Republicans,' while it is still more rare for a physician to belong to the 'Right' or Clerical party."

"Are the medical representatives co-operative on professional and scientific questions without reference to party lines?'

"Yes. Always and effectively."

"Do medical men frequently hold local political office?"

"Yes; they are frequently members of the general counsels of the various departments and mayors of cities. In this connection I might mention Lyons, Bordeaux, Nancy, Rheims and other important cities."

Dr. Pozzi kindly put me in the way of ascertaining the facts relating to the senate, of which he was once a member. The body consists of 300 members, of whom 40 are medical men! Think what might be accomplished in the way of needed and wholesome legislation in the United States if our medical profession were only represented in similar proportion in the two branches of Congress!

I am convinced that the medical profession in the United States is too largely actuated by the idea that participation in political affairs will be accepted as an evidence of corresponding inefficiency in professional attainments. The people, too, seem to hold the view that if a man is of any account as a physician he can be of no account as a politician, and *vice versa*. These ideas or prejudices, provincial as they are, have without doubt exercised a repressive influence on physicians in general in the exercise of their citizenship. It is of some interest, therefore, to study the facts in a country in which examples are sufficiently numerous to be instructive. No country can be more to the point than France, and no body in France can be more illustrative than the Senate, concerning the members of whom I have been fortunate enough to secure the data.

Take for example Combes, whose actions and utterances are commanding more attention than those of President Loubet himself. It is the same Combes who, as the successful instigator of the crusade of the republic against the religious orders which he has expelled from France, has accomplished, in a peaceful way, results as great as were the reforms embraced in the Revolution of 1793 and again in that of 1849. His moral courage is as heroic as any that was ever more dramatically displayed on the field of battle by a general of France. This man has served as a member of the general council of his department, that of Charente-Inférieure, was once mayor of Pons, was elected senator in 1885, and again in 1894, was vice-president of the Senate, served as a minister of public instruction in 1895-96, was re-elected senator last year, and is now minister of the interior and president of the council of state. This man is not only a philosopher and historiographer of distinction and the author of a psychologic work, but he is a doctor of medicine, having begun his life as an active member of that profession.

The special question at issue is: Do physicians who figure prominently in the politics of France amount to anything in a professional way? I have already cited Pozzi and Combes. Let us look up some who are not so distinctly world men—men who are known only, or at least chiefly, in France, and information concerning whom will, therefore, be more in the nature of news. Take, for instance, Gauthier, senator from Audl: He is laureate of the Faculty of Medicine, received distinctions for his service in the cholera epidemic of 1885, made important investigations in the chemistry of iron and, so I am advised, enjoys as a physician the unlimited confidence of the people of Sijean, where he lives. Peyrot, senator from Dordogne, is the author of numerous contributions on surgery and is a leading surgeon in that part of France. Saillard, senator from Doubs, is the professor of surgery at Besançon, while his colleague, Borne, from the same department, is known throughout France by his writings on pleurisy and the neuralgias. Camparan, from the Haute-Garonne, is an accepted authority on the thermal waters of France. Perreal, from Hérault, received a medal from the government for his work in cholera epidemics and for his contributions on the subject. Parisot, from Vosges, received formal distinctions for his labors in the propagation of vaccine, and many others.

The personal standing of these men in their respective communities is still another question of interest and one which can be answered only inferentially, at least, by the record. Thus, for example, one would infer that a man like Perreal, senator from Hérault, is a man of local force and esteem when it is recalled that he was born in 1825, that he has served as a member of his general council, has been mayor of his city for ten years, has been identified with the medical school at

Grénoble, was a victim of the historic second of December, joined the insurrection against the empire, served as an officer of public instruction, and finally, in 1897, when 72 years of age, was elected to the Senate, of which he is still an active member. Camparan, from the Haute-Garonne, is another. He was born in 1832; like his colleague, opposed the empire; was the efficient inspector of thermal waters, one of the largest interests in France; busied himself with his farms, of several of which he is the successful manager and proprietor; after twenty-three years of strictly professional work he in 1879 went to the Senate, where he has since seen constant service as a Republican. These are certainly inferential evidences of high local esteem for a man with such a record as this.

It was my good fortune the other day to visit the beautiful little city of Annecy, the capital of the department of the Haute-Savoie, which is represented in the Senate by Dr. Francoz. He is a native Savoyard, who began his professional career in his beloved mountain country and who chose to serve his people still further by serving as a general councillor, having acted as president of that important body, then as acting mayor of Annecy. He became an officer of the Academy —a distinction which carries the laurel with it in France, and went to the front against the Germans. He was not at home when I called, a circumstance which gave me additional excuse for making inquiries concerning him.

"Dr. Francoz has been senator for some time?" I inquired of an advocate whom I had the good fortune to meet.

"Ah, yes: for about ten years."

"He has been an efficient senator?"

"That is shown by the fact that he has been once re-elected and that he has served as secretary of the senate."

"He must be highly esteemed personally and professionally by his neighbors," I ventured.

"Ah, yes, monsieur; he is the first citizen of Haute-Savoie—the premier physician, too. Even his political enemies admire him. There are many who deplore his absence in Paris, but it can't be helped; he is needed in the Senate!"

The physicians in public life in France are esteemed members of their respective communities.

I have not had time to look up the facts relative to the Chamber of Deputies, but I am advised that they are not essentially different from those which I have presented in regard to the Senate. Be this as it may, however, we must recognize that the medical profession of France is setting an excellent example to that of the United States relative to the recognition and discharge of the broad duties of citizenship. I am sure, however, that with the facts brought home to them the physicians of America will be more in evidence than heretofore in state legislatures and in Congress. We have a distinct duty to perform in that regard. There are already a number of candidacies for Congress by medical men in different parts of the country. It is highly important, where party interests are not distinctly paramount, to see that such candidacies are made successful. Over and above this, however, it is important that the medical profession right now, both through its organized local bodies and by direct personal interrogation, should demand of all candidates for elective office an explicit statement of their views touching specific questions of interest to the medical profession and to the public health. Wherever practicable a committee should be appointed to report on the previous records of candidates touching such questions, for records made are safer criteria than promises given on the eve of election. Careful consideration should be given to such reports and medical men should govern themselves accordingly, remembering always that they are 150,000 in round numbers and that they can exert a powerful influence if they will but do so, by quietly and confidentially advising their friends and patrons on political questions, or, if they prefer, by going openly on the hustings. CHARLES A. L. REED.

Light for Eye Work, Etc.

CHICAGO, Sept. 8, 1904.

To the Editor:—An ideal light for eye, ear, nose and throat work is made by dipping a suitably sized segment of the frosted portion (sand-blast formation) of a 24-candle-power spiral electric lamp in hydrofluoric acid. After dipping it in the acid for a few seconds, wash it off in water, dry and test its translucency. Each application of the acid eats the rough points of glass, leaving it thinner, smoother and more nearly transparent. Continue this until light of desired intensity is obtained, yet stopping short of the point where the reflection of the coil can be produced by a forehead mirror held at its focal distance from a smooth surface as well as from the lamp. A uniform and intense white light is obtained.

I have suggested to a bulb maker that where an asbestos chimney is needed a plain bulb small enough to be placed in the chimney could be used and fitted with the same shaped spiral coil of equal candle power. Then a glass disc treated as above may be placed in the fenestrum of the chimney.

EDWIN S. ANTISDALE, M.D.

Queries and Minor Notes.

ANONYMOUS COMMUNCATIONS will not be noticed. Queries for this column must be accompanied by the writer's name and address, but the request of the writer not to publish his name will be faithfully observed.

AIDING AND ABETTING QUACK INSTITUTIONS.

A censor of a county society writes us in regard to a case in which a member of his society has been proven guilty of consulting with and aiding professionally those who are conducting an advertising so-called "medical institute;" those connected with it being of unsavory reputation and not recognized professionally in any way. After enlarging on the case our correspondent asks: "In view of the large number of well known advertising medical institutions in many of our cities and the not uncommon condition of otherwise reputable physicians having professional and business relations with them, it should be understood whether such physicians can aid and associate with such institutions and at the same time be recognized and be retained as members of a county society."

ANSWER.—In some parts of the country it is not unusual that some otherwise reputable physician acts, directly, or more often indirectly, as consultant to one of the too many so-called "medical institutes," etc., that are conducted by quacks. The physicians who do this certainly do far greater and more real damage to our profession than those who consult habitually with homeopaths, eclectics, etc., who are personally honorable. The pressure of necessity in a crowded profession renders many of us keen for financial returns, and the substantial inducement of the quack under secret arrangement at times proves to be a too great temptation. Those who yield should not expect to retain professional position and fellowship, for this conduct is decidedly "unprofessional" in that it gives comfort and support to the worst of quacks. The damage to the profession is great, for the patient referred by the "institute" to a specialist is bound to conclude that the profession countenances quietly the quack whom it openly condemns, and there is nothing to keep the patient from spreading the knowledge thus gained. The harm that results to professional prestige is inestimably grave, not considering the patient's side of the question. Under the new organization, each county medical society is fully endowed with authority to stamp out such practice, if unfortunately, any of its members succumb to the temptation. No explicit reference to this particular dereliction in professional duty is made in the Principles of Ethics, but the spirit of the medical profession is decidedly against the recognition of such practice as regular. It is unnecessary to enact new legislation to stamp out this evil in the few places where it exists. Every county society will deem it "unprofessional conduct," and can be depended on to discipline the member who is found guilty.

THE COUNTY SOCIETY SHOULD DECIDE ETHICAL QUESTIONS.

A censor of a County Medical Society in Oklahoma asks: Can a member of a county medical society—branch of the American Medical Association—consult with, and otherwise professionally recognize, a non-member, one who has often supplanted physicians where he has been called in consultation?

ANSWER.—Such a question to-day is made almost purely local by the reorganization of medical societies that has been progressing since 1901, and that is now nearly completed. The county medical society, in the new scheme of organization, has full authority to determine its own course in questions ethical. Already this has led to considerable differences between the customs of different county societies. This seeming irregularity of custom on the whole is a result of the adoption of a mode of real organization and of a non-penal "Principles of Ethics." Local professional customs necessarily differ, e. g., as between Chicago and a sparsely settled county in Maine, or as between San Francisco and a back county in Arkan-

sas. The chief good, however, is in the making of the county society the autonomous unit of medical organization, with full power to decide its own ethical course and to penalize members whose conduct departs therefrom.

Therefore, we would advise our correspondent that his own society should determine what course its members should pursue in this particular circumstance. No one is so familiar with the conditions and with the needs of the case as those who are practicing on the spot. Of course, their decision should be guided by the spirit of the "Principles of Ethics." If the erring physician could be brought to see and to abandon the error of his way and to come within the fold of medical organization a double benefit will ensue; a new recruit will be enrolled and a disturber of the peace suppressed. This is by far the best method. If for any reason it can not be followed, or if it meets with failure, there is no one in such advantageous position to decide on the best further course than the members of the county society. If it deems it wise, the society can adopt a rule threatening suspension from membership to those who consult with the offender. We would not advise such a course, and mention it only to illustrate the functions and authority of the county medical society. Some other less drastic course should be found effective.

RIGHT TO PRACTICE IN IRELAND.

MINNEAPOLIS, MINN., Sept. 9, 1904.

To the Editor:—1. What are the requirements of an American physician who is a graduate of a regular recognized American college to practice medicine in Ireland?

2. Can one enter the regular course of the Dublin Trinity College of Medicine, or the other schools, on presentation of credits received from an American college without examination, and then graduate? If so, what other school's credentials are recognized?

J. W. M.

ANSWER.—1. The right to practice medicine in Ireland is obtained only by those who have passed the examinations of one of the various licensing boards, or who have obtained the M.D. degree from a recognized university of Great Britain or Ireland. There are several licenses recognized, among which may be mentioned the Royal College of Physicians of London, the Royal College of Surgeons of England, Society of Apothecaries of London, Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh, Royal College of Physicians of Ireland, Royal College of Surgeons of Ireland, and Apothecaries Hall of Ireland. These vary slightly in their requirements. Some of these licensing bodies recognize certain degrees in this country. The University of Dublin grants the degree of M.B. and M.D., and also B.Ch. and M.Ch. (Bachelor and Master in Surgery, respectively). A candidate for any one of these degrees must be a graduate in arts. 2. No, unless one has also a recognized degree in arts.

A MEDICOLEGAL QUESTION.

———, NEB., Sept. 3, 1904.

To the Editor:—Three years ago I was called to see a married woman suffering from an abortion. The husband refused to pay, and I brought action. During the trial the attorney asked me who called me to the case. I could not remember. I won in the lower court, but it now goes to the higher court. Will I have to know definitely who called me to see the woman, and if I can not tell, will I lose the case? F. P. D.

ANSWER.—It would hardly seem that the case against the husband could be lost on the mere failure to remember who called you to attend his wife, unless there were exceptional circumstances to render that a vital point. The Supreme Court of Nebraska has held, in the case of Spaun vs. Mercer, 8 Neb. 357, that for medical services bestowed on the husband himself, or on his wife and children, by whomsoever the attendance of the physician may have been requested, the husband, and not the wife, is ordinarily liable. Especially is this so where the credit was in the first instance given to the husband, and where there was no special agreement on the part of the wife to bind her separate estate.

SWALLOWED A LARGE STAPLE.

DR. WADE SPERRY, Hamburg, Iowa, writes: Referring to Dr. Stratton's case on page 558 of THE JOURNAL, August 20, I had a similar case. A boy, 1½ years old, swallowed a new fence staple an hour before he was brought to my office. As he showed no bad symptoms, I had my doubts about it. However, I prescribed as many ripe bananas as he could eat. He ate three; afterward he was given a tablespoonful of castor oil. The next morning, 12 hours later, he passed the staple. It was a new one, with very sharp points. No bad symptoms afterward.

PROFESSIONAL CARDS IN LOCAL NEWSPAPERS.

———, MONT., Sept. 1, 1904.

To the Editor:—Does the best sentiment of the profession permit a physician to follow the custom of his town in regard to a card in the newspaper?

I am a newcomer in a small country place, and find the card (with name, the legend "Physician and Surgeon" and address of office) of each of my fellow physicians in the weekly country paper.

J. P. R.

ANSWER.—Yes. Under just the circumstances mentioned, professional custom has sanctioned the publication in local papers of a card containing no more information than that specified by our correspondent.

Marriages.

WALTER STIX, M.D., to Miss Edith Fechheimer, both of Cincinnati.

OSCAR EDWARD FISCHER, M.D., to Miss Irma Hadzsits, both of Detroit, September 1.

F. BRUCE COCHRAN, M.D., Milan, Mo., to Miss Mary Simmons at Lake, Ind., August 31.

INMAN W. COOPER, M.D., to Miss Hortense Crutcher, both of Newton, Miss., September 7.

AUGUSTUS A. ESHNER, M.D., to Miss Julia Friedberger, both of Philadelphia, September 7.

CLAUDE F. SHEONTS, M.D., Hospital, Ill., to Miss Jeannette Foster, at Chicago, September 14.

BENJAMIN H. SHERMAN, M.D., Dexter, Iowa, to Miss Jessie Loar of Monroe, Iowa, September 1.

GRANT A. REBER, M.D., Fentress, I. T., to Miss Estelle Blake of Salina, Kan., September 14.

H. WINNETT ORR, M.D., Lincoln, Neb., to Miss Grace Douglas of Grinnell, Iowa, September 7.

ALBERTUS A. MOORE, JR., M.D., New York City, to Miss Agnes Remsen Vrendenburg of Freehold, N. J.

JOHN G. YOUNG, M.D., to Miss Mae Wells, both of Hickory Grove, Ill., at Keokuk, Iowa, August 31.

RUSSELL A. HIBBS, M.D., New York City, to Miss Madeline Cutting of Pittsfield, Mass., September 1.

WORCESTER A. BRYAN, M.D., Nashville, Tenn., to Miss Emma Berry, at Hazelpath, Tenn., September 14.

STEPHEN TYLER PARSONS, M.D., Aplington, Iowa, to Miss Rachel Hutchison of Chicago, September 6.

WILLIAM GRAY ALLEN, M.D., Chicago, to Miss Amelia Harrison Arundale, at Bradford, Ill., September 7.

WILLIAM BROOKS LA FORCE, M.D., Ottumwa, Iowa, to Miss Anna Carolina Bosquet of Pella, Iowa, August 31.

OLIVER BIERNE PATTON, M.D., Huntsville, Ala., to Miss Carlisle Dorothy Walker of Richmond, Ky., August 30.

THEODORE DROSDOWITZ, M.D., Chicago, to Miss Belle D. Hurwitz of New York City, at St. Louis, Mo., September 5.

HARRY E. CLEMSON, M.D., Port Deposit, Md., to Miss May Oakford of Philadelphia, at Washington, D. C., August 25.

ROBERT FRANCIS MORRISON, M.D., Holyoke, Mass., to Miss Elizabeth Blanche Smith of Chicopee, Mass., September 7.

FLETCHER HODGES, M.D., Indianapolis, Ind., to Miss Rebecca Traill Andrews of Manchester-by-the-Sea, Mass., September 1.

WILLIAM MUEHLBERG, M.D., to Miss Edna Zinke, daughter of Dr. E. Gustave Zinke, both of Cincinnati, at Idaho Springs, Colo., September 7.

WILLIAM CARY MABRY, M.D., acting assistant surgeon, U. S. Army, Fort Sheridan, Ill., to Miss Bessie Mayne of Salt Lake City, Utah, September 7.

Deaths.

Augustus B. Castle, M.D. Transylvania University Medical Department, Lexington, Ky., 1841, surgeon of the First Kentucky Volunteers in the Mexican War; thereafter a practitioner near Lexington, Ky., and Kansas City, Mo.; chief surgeon of the military hospitals at Macon and Fayette, Mo., during the Civil War, who was obliged to retire from practice soon after the war on account of ill health, and lived on his plantation until 1898, when he moved to California, died at Los Angeles, July 29, aged 85.

Albert G. Miner, M.D. Jefferson Medical College, Philadelphia, 1873, a member of the American Medical Association, surgeon of the One Hundred and Seventy-first Ohio Volunteer Infantry in the Civil War, and some-time city councilman of Niles, Ohio, while driving across a grade crossing near his home in Warren, Ohio, August 31, was struck by an express train and instantly killed, aged 67. His wife, who was with him in the carriage, was also killed.

George Newton Lantz, M.D. University of Louisville, 1890, president of the Linn County Medical Association, member of Grand River Medical Society, North Missouri Medical Society, and of the Medical Association of the State of Missouri, died at his home in Brookfield, Mo., September 2, from Bright's disease.

James M. Bowcock, M.D. Jefferson Medical College, Philadelphia, 1856, died recently at his home in Clarksburg, W. Va., after an illness of eighteen months, aged 75. The Harrison County Medical Society, at a special meeting, August 31, passed resolutions of regret.

John L. J. Gormly, M.D. Long Island College Hospital, Brooklyn, 1897, a member of the King's County Medical Society, and visiting surgeon to St. Mary's Hospital, died at his home in Brooklyn, September 7.

John H. Shaper, M.D. University of Michigan, Department of Medicine and Surgery, Ann Arbor, 1891, died at his home in Herkimer, N. Y., September 3, from dysentery, after an illness of one week, aged 36.

Orlando C. Robinson, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1881, died at his home in Bethayres, Pa., August 4, from pulmonary tuberculosis, aged 44.

Philip G. Gary, M.D. University College of Medicine, Richmond, Va., 1900, of Wakeman, King William County, Va., died at the Newport News Hospital, from typhoid fever, September 7.

William Hammett Martin, M.D. College of Physicians and Surgeons in the City of New York, died at his home in New York City from cancer of the stomach, September 3, aged 40.

Charles Meyer, M.D. Berlin University, Germany, 1848, a veteran of the Schleswig-Holstein campaign, died at his home in Macungie, Pa., September 2, from apoplexy, aged 77.

I. T. Tichenor, M.D. Kentucky School of Medicine, Louisville, 1854, died at his home in Stringtown, Nelson County, Ky., August 29, from gangrene, after a long illness, aged 72.

Benjamin Parker Barstow, M.D. Massachusetts, 1892, of Kingston, Mass., died at the Channing Hospital, Providence, R. I., from septicemia, August 25, aged 44.

Leonard Henley, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1847, died at his home in Williamsburg, Va., August 5, aged 83.

Byron Lemly, M.D. Medical College of Virginia, Richmond, 1865, died at his home in Jackson, Miss., August 29, from apoplexy, after an illness of several weeks.

Joseph F. Wheeler, M.D. St. Louis Medical College, 1875, died at his home in Marshall, Mo., September 6, from Bright's disease, after a short illness, aged 60.

William W. D. Parsons, M.D. College of Physicians and Surgeons in the city of New York, 1852, died at his home in Auriesville, N. Y., July 19, aged 72.

John B. Taylor, M.D. University of Maryland School of Medicine, Baltimore, 1855, died at his home in Ivy Depot, Albemarle County, Va., September 2.

John Robert Hamilton, M.D. College of Physicians and Surgeons of Ontario, Toronto, 1872, died at his home in Clinton, Ont., July 12, aged 56.

John Thomas Brosnan, M.D. Bellevue Hospital Medical College, New York City, 1893, died at his home in Brooklyn, September 9, aged 30.

George S. Limerick, M.D. Bellevue Hospital Medical College, New York City, 1891, died at his home in Vicksburg, Miss., July 8, aged 40.

Philip Eugene Craig, M.D. Baltimore Medical College, 1897, died at his home in Baltimore, September 10, from typhoid fever, aged 35.

Harry M. Adams, M.D. St. Louis College of Physicians and Surgeons, 1864, died in June from peritonitis at his home in Worden, Kan.

Edward B. Holt, M.D. Harvard University Medical School, Boston, 1868, died at his home in Lowell, Mass., July 19, aged 49.

William H. McRee, M.D. Medical College of Georgia, Augusta, 1859, died at his home in Stephens, Ga., August 30, aged 76.

Henry E. Parker, M.D. Illinois, 1878, died at his home in Lorain, Ohio, August 30, after an illness of two years, aged 52.

J. E. Waters, M.D. Illinois, 1877, died suddenly at his home in Athensville, Ill., July 30, aged 76.

Edwin W. Knepper, M.D. Indiana, 1897, died at his home in Ligonier, Ind., April 29, aged 70.

David H. Armstrong, M.D., died at his home in Austin, Texas, September 3, aged 74.

Adin Hubbard Newton, M.D., died at his home in Everett, Mass., July 7, aged 87.

H. C. Banner, M.D., died at his home in Erwin, Tenn., August 31, aged 55.

Seth C. Archer, M.D. Ohio, 1865, died recently at his home in Milan, Ohio.

Deaths Abroad.

Franz Riegel, M.D., the well-known professor of clinical medicine at Giessen since 1879, died, August 26, aged 61. His name is familiar from his works on the heart action, the pulse, especially the venous pulse, heart "bigeminie," lead poisoning, acute nephritis, etc. His manual on gastric affections is now in its second edition. The dominant idea with him in the consideration of pathologic conditions was always the disturbance in the physiologic function. Without detracting from the value of pathologic anatomy, he regarded the pathologic function as indispensable to a knowledge of the affection in question. His favorite fields of work were those in which the disturbed function was the chief element in the symptom-complex. His work was further distinguished by his indefatigable study of the subject in hand from every possible point of view. The twenty-fifth anniversary of his professorship was celebrated last May, when the *Münchener med. Wochft.* published a fine portrait of him.

A. S. Landerer, M.D., professor of surgery and director of the Karl-Olga Hospital at Stuttgart, died in Switzerland, August 21, aged 50. He has published many works on surgical and other subjects, but his name is best known, perhaps, by his advocacy of cinnamic acid in the treatment of tuberculosis. Since he introduced this method of therapeutics, twenty years ago, he has unceasingly proclaimed its value, basing his judgment on theoretic premises and clinical experience, but his views have not been generally accepted. Two years ago he was appointed to be director of a large public hospital approaching completion in a Berlin suburb.

State Boards of Registration.

COMING EXAMINATIONS.

Missouri State Board of Health, September 19-21, St. Louis. Secretary, W. F. Morrow, M.D., Kansas City, Mo.

Iowa State Board of Medical Examiners, September 21-22, Capitol Building, Des Moines. Secretary, J. F. Kennedy, M.D., Des Moines.

Territorial Medical Examining Board of Oklahoma, September 28 Guthrie. Secretary, E. E. Cowdrick, M.D., Enid.

New York State Medical Examining Board, September 27-30, New York, Albany, Syracuse and Buffalo. Secretary, Charles F. Wheelock, Albany.

Utah State Board of Medical Examiners, October 3, Salt Lake City. Secretary, R. W. Fisher, M.D., Salt Lake City.

Arizona Board of Medical Examiners, October 3, Phoenix. Secretary, Ancil Martin, M.D., Phoenix.

Idaho State Board of Medical Examiners, Lewiston, October 4. Secretary, R. L. Nourse, Hailey.

Montana Board of Medical Examiners, the Capitol, Helena, October 4. Secretary, Wm. C. Riddell, M.D., Helena.

North Dakota State Examining Board, Grand Forks, October 4. Secretary, H. M. Wheeler, M.D., Grand Forks.

Minnesota State Board of Medical Examiners, State Capitol Building, St. Paul, October 4-6. Secretary, C. J. Ringnell, M.D., Minneapolis.

Vermont State Board of Medical Censors (Regular), Y. M. C. A. Building, Burlington, October 5-6. Secretary, S. W. Hammond, M.D., Rutland.

Rhode Island State Board of Health, State House, Providence, October 6-7. Secretary, Gardner T. Swarts, M.D., Providence.

Regular Board of Medical Examiners of Georgia, Capitol, Atlanta, October 11. Secretary, I. H. Goss, M.D., Athens.

State Medical Board of the Arkansas Medical Society, Little Rock, October 11. Secretary, J. P. Runyan, M.D., Little Rock.

Kansas Medical Board, State House, Topeka, October 11-14. Secretary, G. F. Johnston, M.D., Lakin.

Michigan State Board of Registration in Medicine, Lansing, October 11-14. Secretary, B. D. Harison, M.D., Sault Ste. Marie.

Illinois State Board of Health, Great Northern Hotel, Chicago, October 12-14. Secretary, J. A. Egan, M.D., Springfield.

Board of Medical Supervisors of the District of Columbia, Washington, D. C., October 13. Secretary, Wm. C. Woodward, M.D., Washington, D. C.

Board of Medical Examiners for the State of Texas (Regular), Dallas, October 18. Secretary, M. M. Smith, M.D., Austin.

State Board of Medical Examiners of New Jersey, Trenton, Tuesday, Tuesday evening and Wednesday, October 18-19. Secretary, E. L. B. Godfrey, M.D., Camden.

Louisiana State Board of Medical Examiners, New Orleans, October 21-22. Secretary, Felix A. Larue, M.D., New Orleans.

Wisconsin July Report.—Dr. Philip A. Forsbeck, secretary of the Wisconsin Board of Medical Examiners, reports the written examination held at Madison July 12. The number of subjects examined in was 18; total questions asked 120; percentage required to pass, 75, and not less than 60 in two subjects. The total number examined was 68, of whom 59 passed, including 4 osteopaths, and 9 were conditioned or failed, including 3 osteopaths. The following colleges were represented:

College.	Year Grad.	Per Cent.
PASSED.		
American Medical Missionary College	(1903)	88
University of Colorado	(1903)	85
College of P. and S., New York City	(1898) 89, (1903)	82
University of Missouri	(1904)	79
Rush Medical College, (1902) 84, 85; (1903) 93, 90, 89, 81, 90, 88; (1904) 82, 88, 90, 85.		
University of Minnesota, (1901) 84, (1903) 82, (1904) 86, 87, 80, 87.		
Chicago Homeopathic Medical College	(1904) 83, 84, 78	
College of P. and S., Chicago, (1901) 88, (1903) 83, (1904) 82, 83, 76, 83, 81, 84, 86, 80.		
Denver and Gross Coll. of Med.	(1903)	84
Northwestern University Med. School, (1903) 84, (1904) 87, 84, 83, 85, 87, 80, 87.		
Ohio Med. University	(1904)	82
Queens Med. Coll., Kingston, Ont.	(1904)	84
Johns Hopkins Univ. Med. Dept.	(1904)	86
Vanderbilt University	(1900)	83
Wisconsin Coll. of P. and S.	(1904)	84, 85
University of Michigan	(1900)	82
University of Pennsylvania	(1902)	85
Trinity Medical College, Toronto	(1904) 83, (1888)	82
CONDITIONED.*		
Coll. Homeo. Med. and Surg. Univ. of Minn.	(1901)	89
Wisconsin College of P. and S.	(1904)	82
Johns Hopkins Univ. Med. Dept.	(1904)	81
College of P. and S., Chicago	(1904)	80
Milwaukee Medical College	(1904)	74, 83

One candidate was exempt and withdrew from the examination.

*Below 60 in two studies.

Association News.

REPORT OF THE SCIENTIFIC EXHIBIT

Of the American Medical Association, at Atlantic City, June 7-10, 1904.

FRANK B. WYNN, A.M., M.D., DIRECTOR.

INDIANAPOLIS.

Four years ago in Atlantic City the first scientfic exhibit of the Association was auspiciously inaugurated. It was, perhaps, the most distinctive feature of that memorable meeting. The practical benefits of the Scientific Exhibit have since been abundantly demonstrated. In its evolution, experience soon proved the large heterogeneous collection expensive and difficult to demonstrate. Reduction in size of the exhibit followed naturally with grouping of specimens to illuminate certain phases of pathology. The next step was to correlate the work of the exhibit with that of the sections. Topics chosen for illustration were those of live interest to the profession and prominently considered in the sections.

Those having deeply at heart the best development of this feature of the association work, have striven long and earnestly for one all important end, viz., systematic demonstration of the exhibit by competent persons at stated hours indicated on the official program. Realization of this object was attained at the past session. On Wednesday and Thursday afternoons demonstrations of a practical nature were made in the exhibit hall by men of distinction. The participants were William H. Welch, W. T. Councilman, Harvey W. Wiley, W. M. Late Coplin, H. A. Christian, Edward H. Nichols, C. Y. White, Winfield S. Hall, W. B. Cannon, W. G. Spiller, D. J. McCarthy, J. E. Greiwe, W. T. Longcope, I. W. Blackburn, F. C. Busch and others.

The large attendance on these demonstrations and the close attention shown gave ample proof of their success. In the future they should be arranged with reference to topics in the section programs. A series of demonstrations might be arranged, for example, which would be of particular interest to the internists; another series to the gynecologist, etc. The respective sections might set aside certain hours of their published program for witnessing the demonstrations of interest in the exhibit hall.

In point of artistic excellence the last exhibit easily surpassed any previously made. It will be noted also that research work of recognized scientific and practical value was shown. This is highly creditable and conducive to the scientific prestige of the organization. Research exhibits are highly desirable, but should not constitute a dominant feature. The prime object of the exhibit is educational. It should appeal, of course, to the investigator. But it should never be forgotten that the American Medical Association is a democratic organization. The exhibit should seek, therefore, also the instruction of the rank and file of the profession, in recent scientific knowledge of direct bearing on practical medicine. A specimen of hepatized lung or a contracted kidney may seem very common and uninteresting to an expert pathologist, but to the observant practitioner they offer an instructive object lesson. And surely a thorough knowledge of gross pathology offers the safest foundation for expert diagnosis. And thus since the inauguration of the exhibit, practical dissemination of pathologic knowledge has been going on.

A most beneficent influence of the Scientific Exhibit has been the stimulation of the collection of gross museum specimens in reputable medical colleges and their artistic preparation for teaching purposes. Those who visited the first exhibit four years ago and the last one must have been impressed by the marked artistic improvement in the specimens shown. The Scientific Exhibit, therefore, has made no small contribution to medical education by arousing among colleges a wholesome rivalry in the exhibits shown.

A beneficent influence of the exhibit has been to emphasize gross as distinguished from microscopic pathology. The improvements of the microscope and the triumphs of bacteriology have led many teachers to neglect those things which may be studied with the unaided eye. Few of the medical institutions of the country are thoroughly equipped with museum collections for teaching purposes. A considerable number of creditable museum collections have grown up in the last four years directly as the result of the work of this Association.

The membership of this organization includes an army of medical workers—generals, captains, experts and, most important of all, the common soldiers who bear the brunt of the battle against disease. To all the Scientific Exhibit is a most helpful agency, capable of still greater usefulness. Closer correlation of the work of the sections with that of the exhibit; complete illumination of a few live topics each year; competent demonstrations by men of ability; fuller realization of the intimate relationship of the exhibit to the sections—these things will make for the still greater efficiency of the exhibit.

The many scientific workers who have labored so earnestly for the success of this exhibit have as their reward the satisfied consciousness of a duty well performed and the enthusiastic approbation of the profession. The details of the respective exhibits are given below.

BOSTON UNIVERSITY SCHOOL OF MEDICINE:

W. H. WATTERS, O. R. CHADWELL AND HENRY WATTERS.

1-54. *Series of Appendices* mounted in special tubes, illustrative of the catarrhal, ulcerative, obliterative and other types of appendical disease.

55-100. These were miscellaneous specimens and included: A lung series, kidney series, lymph gland series, series of carcinoma of breast showing erosion, retraction of the nipple and metastasis.

These were all Kaiserling preparations mounted in glycerin jelly. Most of the mounts were in Petri dishes on ground glass plates, which gave an excellent background for the specimens. Great credit is due this institution not only for this beautiful exhibit, but for a similar one made at the Saratoga session. Dr. Henry Watters was in charge of the collection.

CINCINNATI HOSPITAL MUSEUM:

J. E. GREIWE.

HEART SERIES.

101. *Acute Pericarditis.*

102. *Tuberculosis of Pericardium*, involving the entire cardiac surface and associated with marked hypertrophy of left ventricle.
103. *Tuberculosis of Pericardium*, with extreme dilatation of the sac which contained five pints of blood-stained fluid at necropsy.
104-109. *Adherent Pericardium.*—Of interest in these specimens was the constant association of hypertrophy and the frequency of aortic lesions.
110. *Intramural Blood Clot* the size of a walnut situated in the apex and surrounded by a dense wall of connective tissue.
111. *Secondary Sarcoma of Myocardium.*—Primary trouble of the liver.
112. *Concentric Hypertrophy*, with diminution in size of left ventricle. No valve lesions.
113. *Acute Suppurative Myocarditis*, secondary to septic pneumonia. Thrombus of coronary and miliary abscesses throughout myocardium.
114. *Degenerative Changes of Aortic and Mitral Leaflets.*—Marked atheroma of the coronaries, extreme bradycardia—pulse 28.
115. *Unusual Acute Obstruction of Coronary.*—The specimen was obtained from a lad of 12, who died suddenly. The autopsy revealed an acute vegetating endocarditis. The edge of one aortic valve became torn loose, remaining attached at one end while on the free extremity were three small globular vegetations. These small masses were found obstructing the coronary vessel.
116-118. *Lesions of Aortic Valves and Aortic Ring.*
119. *Vegetations of the Aortic Valves* with perforation of the septum ventriculorum.
120. *Extreme Calcareous Infiltration of Aortic Valves.*
121. *Aortic Stenosis.*—Cor Bovinum.
122. *Aneurism of Aorta. No Ventricular Hypertrophy.*
123. *Aortic Regurgitation.*—Hypertrophy and dilatation of left ventricle and secondary insufficiency of mitral valves.
124. *Mitral Stenosis.*—papillary muscles converted into thick fibrous bands.
125. *Vegetations on Mitral Leaflets.*
126. *Marked Stenosis of Mitral Orifice.*
127. *Endocarditis Verrucosa* with infarcts in spleen, kidney and brain.
128. *Globular Vegetations* located below the aortic valves.
129. *Combined Lesions of Aortic, Mitral and Tricuspid Valves.*
130. *Mitral Disease with Extreme Dilatation of Right Heart.*—Great irregularity of pulse.
131-133. *Mitral Regurgitation.*—Great hypertrophy and dilatation of left heart and secondary insufficiency of tricuspid orifice.

This excellent heart series was demonstrated by Dr. Greiwe and, taken with the beautiful kidney group exhibited at New Orleans a year ago, speaks well for the character of pathologic work being done at the Cincinnati Hospital. This makes the fourth successive year in which this institution has been a contributor to the Scientific Exhibit, and has, therefore, played no small part in building up this feature of the Association work.

HARVARD MEDICAL SCHOOL:

(A) DEPARTMENT OF PATHOLOGY: W. T. COUNCILMAN, HENRY A. CHRISTIAN AND EDWARD H. NICHOLS.

This very complete exhibit consisted chiefly of bromid enlargements of photomicrographs and paintings of gross lesions. They showed an unusual degree of beauty and clearness of microscopic detail. They were neatly framed and in the university are used for wall decoration as well as teaching.

134-147. *Parasite of Smallpox.*
148-155. *Lesions of Smallpox.*
156-158. *Vaccinia.*
159-161. *Parasite of Scarlet Fever.*
162-163. *Parasite of Aleppo Boil.*
164-178. *Malarial Parasites.*
179-190. *Cirrhosis of Liver.*
191-206. *Lesions of Typhoid Fever.*
207-224. *Lesions of Lymphatic System.*
225-242. *Lesions of Diphtheria; Membrane, Lung and Kidney.*
243-250. *Neuroglia Tissue from Subcoccygeal Glioma.*
251-255. *Neuroglia Tissue in Dermoid Cysts.*
256-258. *Bacteria.*
259-265. *Lesions Due to Bacteria.*
266-268. *Tubercle Bacilli (human) Grown on Different Media.*
269-271. *Tubercle Bacilli (bovine) Grown on Different Media.*
272-283. *Lesions of Tuberculosis.*
284-298. *Lesions of Chronic Non-Tubercular Arthritis.*
299-315. *Lesions of Chronic Non-Tubercular Arthritis Paintings.*

In addition to the above photomicrographic exhibit, lantern demonstrations were made covering much the same field by Drs. Councilman, Christian and Nichols. The large attendance on the occasion attested the great interest taken.

(B) DEPARTMENT OF PHYSIOLOGY:

W. T. PORTER AND W. B. CANNON.

This exhibit consisted of apparatus for the advancement of laboratory teaching in physiology and allied sciences. It was designed by Dr. Porter and presented by Dr. Cannon.

316-326. Kymograph, Inductorium and a Number of Other Pieces of Apparatus.

These instruments, which have found extended use both here and abroad, were designed for the following ends:

The making of physiologic apparatus distinguished by simplicity of design, sound workmanship and low cost is of high importance in the development of physiology. The ordinary student of physiology is essentially a book man, while the professional physiologist is essentially a laboratory man. Student and professor should go the same road, along which few steps can be taken without apparatus of precision. Physiologic apparatus has heretofore been made on the "model" plan, each for itself, without regard to the number of "operations" required, and with little or no thought as to the subsequent maintenance of the apparatus in good condition. A large laboratory class requires a great supply of apparatus. One hundred and fifty men working in the physiologic laboratory every day during four months require more than 25,000 articles. It is clear that the cost of such an equipment, made on the old lines, would be too great for any school. The sound training of large classes in physiology depends absolutely on the invention of apparatus designed with reference, 1, to its "manufacture"; 2, to its storage and issue; 3, to its maintenance in good condition.

By "manufacture" is meant technically the making of a large number of "parts" for the same apparatus consecutively, by preference on special lathes and with special tools. The number of steps or "operations" should be the fewest possible, as each operation must be repeated many times. The labor of "settting" a turret lathe, which will make eight operations with eight different tools on the same piece of metal, is as great for one piece as for a thousand. Astonishing economics may also be secured by the use of special automatic devices.

Effective storage and issue also demand that the apparatus be compact and that important parts be protected so that they may not be injured when the apparatus is handled rapidly by persons of small experience. Economic maintenance requires construction with special reference to durability and cleanliness.

With all this the apparatus must be admirably exact, serving the student for the repetition of classical experiments, and satisfying the investigator for all the ordinary needs of research.

The supply of apparatus of this type bears the same relation to the advance of physiology that the commissariat bears to the advance of an army.

JEFFERSON MEDICAL COLLEGE.

W. M. L. COPLIN AND JOHN FUNKE.

This was the first time the Jefferson Medical College had contributed to the Scientific Exhibit. Previous failure to participate was abundantly made amends for in the superb array of pathologic material presented on this occasion. Professor Welch characterized it as the finest collection he had ever seen. I desire formally to express my deep appreciation not only of this fine pathologic contribution, but of my great personal indebtedness to Professor Coplin for his assistance as a member of the committee in promoting and installing the Scientific Exhibit.

327-366. *Forty Typical Specimens Illustrating Renal Disease.*—Including the various forms of nephritis and surgical lesions—hydronephrosis, nephrolithiasis, pyonephrosis, hypernephroma, congenital cystic disease, etc. This series was formally demonstrated by Professor Coplin as part of the official program.
367-391. *Twenty-five Specimens Illustrating Diseases of the Lung.*—Including various stages of croupous pneumonia, different phases of tuberculosis from acute miliary to chronic fibroid. These were exhibited in special jars designed by Professor Coplin.
392-402. *Specimens Illustrating Problems in Comparative Pathology.*—Permanently mounted in fluid. Including tumor from liver of horse, some lesions in lungs and other viscera of the lower animals.
403-417. *A Series of Fifteen Embryos* mounted in gelatin under watch glasses. They were intended more for demonstration of this method of exhibiting embryologic specimens than for the purpose of illustrating any special subject in embryology. They were prepared by H. E. Radasch, demonstrator of histology in the Jefferson Medical College.
418-482. *A Series of Sixty-five Specimens* mounted by a new gelatin method intended to illustrate special methods in the final observation and orientation of material for teaching morbid anatomy, and illustrating the following subjects: (a) Typhoid Fever, ulcers. (b) Intestinal Tuberculosis, secondary; ulcers. (c) Brains, showing secondary tumors and various phases of meningitis. (d) Kidneys, exhibiting typhoidal nephritis, typhoidal pyelitis, suppurative nephritis, chronic interstitial nephritis, etc. (e) Lungs, showing different stages of croupous pneumonia, catarrhal pneumonia, etc. (f) Lungs, showing metastatic sarcoma. (g) Lungs, showing various phases of tuberculosis. (h) Arteries, showing arteriosclerosis, thrombo-arteritis, etc. (i) Glands from Hodgkin's disease. (j) Stomach, showing multiple erosions and another specimen of gastric ulcer, loaned by Dr. A. O. J. Kelly.

JOHNS HOPKINS UNIVERSITY:

WILLIAM H. WELCH AND W. G. M'CALLUM.

The Association is deeply indebted to the department of pathology of this institution for its loyal and liberal support of the Scientific Exhibit. At every meeting since its inauguration the university has sent complete specimen groups, illustrative of some topic prominently considered in the sections. A year ago fibroid tumors and amebic dysentery with its sequellæ were illustrated; this year arteriosclerosis. Professor Welch demonstrated the latter series formally as part of the official program. This added to the completeness of the symposium on the subject presented in the Section on Practice.

483. *Dissecting Aneurism of Aorta.*
484. *Traumatic Dissecting Aneurism.*
485. *Atheroma and Aneurismal Dilatation of Aorta.*
486. *Arteriosclerosis of Aorta with Calcification.*
487. *Arteriosclerosis-Atheromatous Ulceration and Calcification.*
488. *Fresh Diffuse Arteriosclerosis of Aorta.* Case of typhoid fever.
489. *Arteriosclerosis, Calcification and Ulceration of Sclerotic Plaques.*
490. *Arteriosclerosis* and occlusion of anterior descending coronary artery; chronic fibrous myocarditis; aneurismal dilatation of apex of left ventricle; thrombus formation.
491. *Arteriosclerosis of Aorta:* Cardiac Hypertrophy.
492. *Extreme Deforming Arteriosclerosis of Aorta.*
493. *Localized Arteriosclerosis of Aorta.*
494. *Arteriosclerosis:* Chronic Mitral Endocarditis.
495. *Fresh Disseminated Arteriosclerosis of Aorta.*
496. *Arteriosclerosis of Aorta* with dilatation and thrombus formation.
497. *Arteriosclerosis of Aorta;* thrombus formed on arteriosclerotic ulcer.
498. *Extreme Arteriosclerosis of Aorta* with Calcification.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL.

WINFIELD S. HALL.

This institution has contributed each year some new apparatus employed in research work in physiology. This is highly creditable to the department and has been greatly appreciated in the Scientific Exhibit. Professor Hall demonstrated the following apparatus as part of the official program. An article fully descriptive of these will appear in a later issue of THE JOURNAL.

499. *Apparatus to Determine the Index of Refraction of Water or of Glass.*
500. *Apparatus to Determine the Focal Distance of a Lens.*
501. *To Map the Fields of Indirect Vision* for Form and Color.

MEDICAL COLLEGE OF INDIANA, UNIVERSITY OF INDIANAPOLIS:

FRANK B. WYNN AND HELENE KNABE.

1. RESEARCH GROUP.

These specimens were obtained from an inspection of the suprarenal glands in 11,000 head of cattle. They were all gelatin preparations mounted uniquely in plate glass boxes. The latter were fitted in heavy oak frames in order to permit handling without danger of breakage.

502-505. *Supernumerary Adrenals.*—Found rather frequently in the ox and connected more or less intimately with the main gland.
506-509. *Hemolymph Nodes.*—These are often found intimately connected with the capsule of the adrenals and although generally much darker, may have the same color and from gross inspection might be mistaken for accessory adrenals. This series was shown for purposes of comparison with the preceding series.
510-516. *Extensive Black Pigmentation of Adrenals.*
517-520. *Similar Black Pigmentation of Hemolymph Nodes in Ox.*
521-537. *Series of Seventeen Tumors of the Adrenals.*—They varied in size from a cherry to the fetal head; exhibited extensive black, brown and orange pigmentation and extensive calcareous infiltration. These neoplasms were mostly sarcomata. A microscopic study of each is now in progress.

These were all gelatin preparations in Petri dishes set by sixes in heavy oak boards from which they were readily removable. They were designed by Dr. Wynn for purposes of class demonstration.

2. MISCELLANEOUS GROUP.

538-552. *Series of Tuberculous Specimens.*—(a) Lungs, showing acute miliary type, caseous pneumonia, chronic apical lesions with abscess formation, fibroid phthisis, etc. (b) Liver, miliary form. (c) Kidney, acute miliary and chronic types. (d) Spleen, miliary form. (e) Lymph nodes, caseation and acute invasion. (f) Pancreas, acute miliary type.
553-557. *Cancer Series.*—Designed to show especially metastasis in the liver, spleen and kidney.
558-567. *Liver Series.*—Illustrating alcoholic and biliary cirrhosis; passive congestion; fatty infiltration, etc.

MEDICO-CHIRURGICAL COLLEGE.

(A) MICROSCOPIC EXHIBIT: JOSEPH M'FARLAND AND GUTHRIE M'CONNELL.

568-617. This was the only microscopic exhibit. The sections were well prepared and each microscope was accompanied by an explanatory card or drawing. The demonstrations of those in charge added greatly to the effectiveness of the series, which was designed to show: Excessive cellular activity, edema, hyperemia, lymph metastasis, lymphogenic extension, impregnation of blood vessels, cellular thrombosis, cellular embolism and other conditions in the primary seat of disease, predisposing to metastasis. There were also a number of specimens showing how secondary tumors develop from lymphovascular and blood vascular emboli.

(B) GROSS PATHOLOGIC EXHIBIT: JUDSON DALAND.

This was a very complete heart and vascular series. For the purpose of close inspection the specimens were exposed on platters.

618-623. *Arteriosclerotic Series.*—Showing obstruction of the coronaries, with secondary myocardial changes; fibrous thickening of the aortic valves; atheromatous changes and tendency to aneurismal dilatation of the ascending aortic arch.
624-627. *Series of Lesions of Aortic Valves.*—Showing varying degrees of chronic aortic valvulitis associated with left ventricular hypertrophy.
628. *Diffuse Sclerotic and Calcareous Changes* which have led to pouching off the aorta, deformed aortic and mitral leaflets, with stenosis at the latter orifice.
629-631. *Acute Vegetative Mitral Endocarditis.*
632-633. *Buttonhole Mitral.*
634. *Pedunculated Growth on Mitral Leaflet.*
635-636. *Mitral Stenosis. Enormous Hypertrophy.*
637-640. *Series Illustrating Extensive Hypertrophy and Dilatation.*—Secondary to the various cardiac lesions.
641-643. *Series Showing Fatty Degeneration* and fibrous changes of the myocardium.
644-645. *Ulcerative Endocarditis.*
646-652. *Series Illustrating the Various Types of Pericarditis* ranging from the bread-and-butter appearance of the acute fibrinous to the obliterating form.
653-655. *Aneurism of Left Ventricular Wall.*
656-660. *Series Illustrating Various Types Frequently Found in Aorta.*
661. *Aneurism of Subclavian* treated by wiring and electrolysis.
662. *Specimens from Same Case* (Dr. Wood).—Showing thrombus of left external iliac and embolus lodged in left popliteal artery.
663-667. *Miscellaneous Specimens.*

UNIVERSITY OF PENNSYLVANIA.

(1) LABORATORY OF SURGICAL PATHOLOGY: CHARLES H. FRAZIER AND GEORGE P. MULLER.

668-718. *Fifty Water Color Pictures, Enlarged Photomicrographs and Drawings,* designed to show the method of teaching surgical pathology at this institution.

They consisted of "pictorial groups" illustrating both microscopic and macroscopic phases of pathologic lesions. The group illustrating mammary carcinoma included a photograph of the patient, a water color of the breast in cross section after removal and lastly photomicrographs and drawings to show histopathologic structure. Each picture group was separately framed. In the absence of Professor Frazier, Dr. Muller demonstrated the collection, giving in detail the methods of teaching this subject at the university.

The "Pictorial Groups" were as follows: (a) Acute Catarrhal Appendicitis. (b) Acute Interstitial and Ulcerative Appendicitis with and without perforation and concretion. (c) Chronic Interstitial Appendicitis. (d) Chronic Interstitial and Obliterating Appendicitis. (e) Mammary Gland, Scirrhus Carcinoma. (f) Mammary Gland: Medullary Carcinoma. (g) Mammary Gland; "Malignant Adenoma," a type in which the form of the acini is preserved arising in this specimen from an outlying mammary lobule. (h) Mammary Gland, showing metastasis in lymph glands and the skin in extensive ulceration resulting from carcinoma. (i) Mammary Gland, recurrence at site of former incision; carcinoma nodules in pectoral muscle (j) Mammary Gland, adenoma, intracanalicular papillary fibroma. (k) Parenchymatous Goiter. (l) Epithelioma of Lip. (m) Carcinoma of the alveolar mucous membrane encircling inferior maxilla and resembling sarcoma of latter. (n) Hypernephroma of Kidney. (o) Periosteal Sarcoma, spindle celled (p) Medullary Sarcoma of Bone. (q) Caries and Necrosis of Bone (r) Repair of Bone After Fracture. (s) Myxosarcoma in Popliteal Space.

(2) WILLIAM PEPPER CLINICAL LABORATORY: D. J. M'CARTHY.

This very complete collection was confined entirely to the domain of neuropathology. The specimens were placed in shallow open jars so exposed as to show the lesion to best advantage. Accompanying pencil sketches were of great help to the observer in studying the specimens. Dr. McCarthy formally demonstrated the collection, which consisted of the following series:

719-727. *Specimens Illustrating the Vascular Supply of the Brain* as determined by areas of softening, due to obliterating endarteritis of the middle cerebral or its branches. Specimens showed areas of softening distributed as follows: (1) Broca's area and island of Reil. Clinically there was pure motor aphasia. (2) Angular gyrus. (3) First and second tempero-sphenoidal lobe. (4) Ascending parietal (post central) gyrus—lower two-thirds. Parly sis of arm and face. (5) Ascending frontal gyrus. Recent obliteration of vessel. Sudden paralysis of arm, face and to some extent of leg from hemorrhagic extravasation. (6) Softening and atrophy in the entire area of distribution of middle cerebral. (7-9) Softening following complete obliteration of the sylvian artery.
728-729. *Specimens of Obliterating Endarteritis* of terminal branches of the posterior cerebral showing softening in (1) cuneus. (2) fusiform and lingual lobe.
730-731. *Obliteration of Basilar* with softening of (1) superior

surface of cerebellum. (2) Inferior third of medulla with destruction of fillet and pyramids.

732-736. *Series Showing Multiple Areas of Softening* due to arterial disease.

737-739. *Series of Lesions Due to Disease of Venous System of Brain.* (1) Extensive venous thrombosis of the veins of Galen, straight sinus, lateral sinuses and venous sinuses supplying cerebellum. (2) Infiltrating venous hemorrhage affecting internal capsule, optic thalamus and caudate nucleus. (3) Venous hemorrhage limited to area of external capsule.

740-741. *Lesions Secondary to Hemorrhage* before birth. (1) Congenital absence of posterior third of right cerebral hemisphere. Child died soon after birth. Area between brain and dura was filled with a grumous fluid composed mainly of disorganized corpuscles. (2) Extensive organized subdural hemorrhage covering the entire left half of brain of a five-months fetus. Spontaneous abortion occurred while under observation in hospital.

742-744. *Series of Aneurisms of Cerebral Arteries.*

745-746. *Rupture of Cerebral Arteries.*

747-750. *Hyaline and Pseudo-Hyaline Exudates* into the Cerebral Ventricles.

751-760. *Series of Brain Tumors.* Endothelioma of left prefrontal lobe infiltrating the cortex. Fibro-sarcoma of left motor cortex. Sarcoma of left leg center. Sarcoma of left tempero-sphenoidal lobe. Glioma of middle lobe of cerebellum. Fibro-sarcoma of left tempero-sphenoidal lobe. Multiple sarcomata of brain. Infiltrating sarcoma of tempero-sphenoidal lobe. Myxo-sarcoma arising from choroid plexus—horse. Endothelioma of lateral ventricle—horse.

761-765. *Series Illustrating Tuberculosis of the Nervous System.* Tuberculous meningitis with area of calcification. Calcified area of tuberculosis of cerebellum. Pachymeningitis externa—tuberculous. Pachymeningitis interna—tuberculous. Multiple tuberculous tumors of the brain, one the size of a hazelnut on the left crus.

A number of the specimens shown were from the cases of Dr. C. W. Burr at the Philadelphia Hospital; others were from the cases of Drs. W. S. Wadsworth, J. H. Lloyd and W. H. Armstrong. The remainder were from Dr. McCarthy's cases.

COLLEGE OF MEDICINE, SYRACUSE UNIVERSITY:

GAYLORD P. CLARK.

766-767. *Physiologic Models of the Nervous System.*

These were designed by Dr. Clark and are used in teaching the arrangement of the principal pathways of the nervous system. They consist of serial sections made of wood, representing typical sections of the spinal cord and brain enlarged twelve diameters, and painted to indicate the relative masses of gray and white matter. Openings are cut in the white matter to correspond with the principal tracts of nerve fibers. The sections are arranged one above another on a vertical support. The neurons are represented by colored cords, with knots tied either in one end or in the course of each cord, to indicate the cell body, and the ends are frayed to suggest the dendrites and terminal arborisations. The colors are chosen to distinguish the afferent, ascending, descending and efferent fibers, the colors of the violet end of the spectrum being reserved for the first two sets, those of the red end for the last two, the brighter colors being used for the peripheral, the darker for the central fibers.

In the absence of Dr. Clark, Dr. Busch demonstrated the method of using the models for teaching purposes.

UNIVERSITY OF TEXAS, DEPARTMENT OF MEDICINE:

WILLIAM KEILLER.

768-772. *Series of Five Wax Casts* to represent the surface appearance and progressive dissections of a case of cystic goiter.

The casts were designed to place on record and demonstrate to students the complete surgical anatomy of a case of cystic enlargement of the thyroid gland which came to the dissecting room. A plaster-of-Paris mold was taken of the bust and of each successive dissection. The technic employed is as follows: After allowing the mold to dry and cool, it is then moistened with water, banked up at the edge with putty and into it is poured a melted wax composed of equal bulks of hard paraffin, white wax and stearin (this may be tinted by adding a very little artist's oil color, say yellow ochre and carmine for a flesh tint). The melted wax is laved up on the side by means of a flat bristle paint brush, the whole done slowly as the wax hardens. After one-fourth of an inch is set on all parts of the mold it is backed and strengthened by narrow strips of burlap steeped in wax and overlying each other, to give the cast strength with the least thickness. When the whole cast is about half an inch thick the mold and cast are immersed in cold water. In two or three hours the cast will shrink slightly and become easily separable from the mold. The cast is then, if necessary, partly carved and tinted with oil colors, the transparent colors being preferred as far as possible.

773. *Leaden Specimen Tray or Box* for the preservation and demonstration of anatomic or pathologic wet specimens.

It was designed by Dr. Keiller and consists of a shallow leaden tray, set in a heavy oak frame and covered with glass, and with tubular inlet for admission of the preserving fluid.

PHILADELPHIA GENERAL HOSPITAL:

(A) GROSS MUSEUM SPECIMENS: R. C. ROSENBERGER.

This was, in the main, a heart collection, and there is probably no finer in the country. The specimens were very carefully dissected, well preserved and the lesions skillfully exposed for inspection.

774-779. *Series Illustrative of Pericarditis* showing beautifully the fibrinous, fibrino-purulent, hemorrhagic, villous and adherent types.

780-807. *Endocarditis Series*—acute and chronic. These showed varying degrees of stenosis and insufficiency of the mitral and aortic orifices. Especially well illustrated were: Vegetations—at different stages and of various sizes. Ulcerative destruction of the leaflets. Valvular fenestration. Valvular deformities arising from sclerotic and calcareous changes.

808-810. *Series of Congenital Heart Anomalies.* Communication between ventricles: patulous ductus arteriosus. Patulous foramen ovale; one from a patient aged 72 years.

812-813. *Aneurism of Left Ventricle.*

814. *Organized Thrombus in Left Ventricle* extending into aorta.

815. *Secondary Carcinomatous Nodules* in left ventricle.

816. *Aneurism of Innominate Artery.*

817-824. *Kidney Series* illustrating congenital cystic disease, hydronephrosis, nephrolithiasis, and tuberculosis.

(B) ROENTGEN RAY LABORATORY: MIHRAN K. KASSABIAN.

825-1025. *Series of Skiagrams* made in the hospital and classified as follows: (1) Foreign Bodies.—In various parts of the body, including bullets in the brain, eye, and methods of localization. (2) Fractures and Dislocations.—These were of nearly every known variety and included several cases of congenital dislocations of the hip joint both before and after reduction by Professor Lorenz. (3) Diseases of Bones and Joints.—These included tuberculosis, syphilis, rachitis, osteomalacia, ostitis, periostitis, tumors and osseous diseases occurring in the course of nervous diseases, as hemiplegia, tabes dorsalis, syringomyelia, etc. (4) Lung Diseases—Phthisis in its various stages, and the several varieties of pneumonia and pleurisy with effusion. (5) Heart and Aorta.—Hypertrophy, dilatation and displacement of heart; aortic aneurisms. (6) Renal, ureteral and vesical calculi. (7) Brain tumors and cysts, etc. (8) Dental Cases.—Unerupted teeth, necrosis, roots, etc.

1026-1125. *Transparencies.*—These were made by camera and reduced to a uniform size (4x5) and placed in two frames illuminated through ground glass from the back. These pictures showed more and sharper details than the prints and negatives.

1126. *Stereoscopic Apparatus.*—This apparatus is unique, producing a perspective or relief effect in the picture. This relief effect is particularly valuable to the surgeon in diagnosing fractures and dislocations and foreign bodies, as it shows the amount of overlapping of fragments, extent and character of the dislocation and the exact location of foreign bodies.

1127-1167. *Photographs of Cases* under *x*-ray treatment for malignant growths, skin diseases, etc. Dr. Kassabian also exhibited a number of skiagrams from his private collection.

PENNSYLVANIA HOSPITAL:

WARFIELD T. LONGCOPE.

This collection was entirely in illustration of Hodgkin's disease. Seven cases afforded the material of which Dr. Longcope has made careful study. He made a formal demonstration of the series as part of the official program.

1168. *Case 1.*—Photograph of the patient before death. The specimens exhibited consisted of two huge wing-like masses of enlarged lymph nodes extending on either side of the trachea; also enlargement of the submaxillary, sublingual, superior mediastinal and retroperitoneal nodes; and the axillary group on one side. Accompanying drawings represented the histologic appearance of the lymph nodes.

1169. *Case 2.*—Photograph showing typical appearance of the patient. The specimen showed extensive enlargement of the cervical lymph nodes on each side of the retropharyngeal nodes and the submaxillary groups. Reproductions from drawings to show histologic character.

1170. *Case 3.*—Enlargement only of a few lymph nodes on one side of the neck. No involvement elsewhere.

1171. *Case 4.*—Enlargement of the retroperitoneal lymph nodes, those along the iliac vessels and in the left inguinal region.

1172. *Case 5.*—Spleen in Hodgkin's disease. Specimen shows extensive involvement of the organ by secondary nodules. Reproductions from drawings to show the histologic changes in the lymphomatous nodules.

1173. *Case 6.*—Spleen from case of Hodgkin's disease presenting much the same appearance as the preceding.

1174. *Hodgkin's Disease. Lung.*—The specimen demonstrated the mode of involvement of the lung by lymphomatous nodules. The bronchial lymph glands were markedly involved.

Microscopic sections from various cases were shown to demonstrate the special phases of lesions.

THE HENRY PHIPPS INSTITUTE:

LAWRENCE F. FLICK AND RANDLE C. ROSENBERGER.

This beautiful collection was highly creditable to the institution from whence it came.

1175-1193. *Series Illustrative of Tuberculosis in Man.*—The preparations illustrated well the following lesions: Incipient apical tuberculosis—unmixed infection. Ulcerative tuberculosis at the apex with complicating pneumonia at base. Ulcerative type with

recent hemorrhages. Ulcerative form of secondary miliary invasion throughout lung. Ulcerative form with peribronchial infiltration. Cavity formation of all types, from those small in size to those occupying a whole lobe or the entire lung; cavities surrounded by thick fibrous walls. Bronchiectasis associated with cavity formation. Greatly thickened pleuræ associated with tuberculosis. Tuberculous lesions of the intestines. Tuberculous leptomeningitis.

ZOOLOGICAL SOCIETY OF PHILADELPHIA:

C. Y. WHITE.

This exhibit was devoted to tuberculosis in the lower animals. The specimens were beautiful Kaiserling preparations and were formally demonstrated by Dr. White as part of the official program. This collection together with the preceding made the exhibit of the lesions of tuberculosis in man and the lower animals very complete.

1194-1196.—*Tuberculosis in Cattle.*—The specimens showed the early, moderate and advanced lesions of "grape disease" of the pleura in cattle.

1197. *Tuberculosis of the Liver from a Nyghalae Deer.*—The specimen showed well the chronic fibro-caseous form often seen in herbivora.

1198. *Tuberculosis of Lungs of a Goat.*

1199. *Tuberculosis of Lungs of a Bear.*—The two preceding specimens showed the lesions of the lungs often observed in carniverous animals, i. e., widespread tuberculosis with the formation of cavities.

1200. *Tuberculosis of Lungs in a Lemur.*—The whole of one lung showed an acute tubercular pneumonia.

1201-1212. *Series of Tuberculous Spleens from Monkeys.*—The various stages of the tuberculous process were beautifully shown. In some of the organs were pinhead sized tubercles; others contained nodules the size of a cherry or walnut. One spleen showed almost complete caseation.

1213-1214. *Tuberculosis of Spleen in Children.*—These were exhibited for purposes of comparison with the tuberculous spleen in monkeys. The similarity is striking.

1215-1223. *Generalized Tuberculosis in Monkeys.*—All organs were shown in various stages of the tuberculous process.

INDIANA STATE MEDICAL SOCIETY.

FRANK B. WYNN.

This society enjoys the distinction of being the parent of the Scientific Exhibit idea. The organization has not only maintained its own annual exhibit of this character for the past seven years, but has been a contributor to the exhibit of the Association the year before and every year since the Scientific Exhibit was inaugurated.

1224. *Specimen of Cor Bovinum.*—Weight in fresh state, 1.544 grams. Incompetence of mitral leaflets. The patient had taken forty-five minim doses of tincture of digitalis four times daily for a long period, with marked benefit in relief of symptoms. This may have had something to do with the enormous hypertrophy. Case of Dr. Wynn.

1225. *Tuberculous Pericarditis.*—Of long standing as indicated by thick fibrous walls (measuring a centimeter at points). Adhesions finally broken down by extensive caseation involving the entire cardiac surface. Great hypertrophy. Case of Dr. Guido Bell.

1226. *Large Myxofibromatous Polyp,* one by three inches in dimensions, attached one inch above the ileocecal valve, and protruding into the cecum. Death occurred with symptoms of obstruction. Operation refused. Case of Dr. L. A. Hyde.

1227. *Myxofibromatous Polyp of Stomach.*—Two inches in length by a half in diameter. Attachment one inch from pyloric constriction. Polyp deflected and protruded into pylorus, producing uncontrollable vomiting and death. Case of Dr. E. Wishard.

1228. *Round-Celled Sarcoma* the size of a walnut in the intestinal wall, surrounded the opening of the common duct and produced extreme icterus. Metastases in liver. Case of Dr. Sexton.

1229-1233. *Series Showing Very Typical Arteriosclerotic Changes* in the splenic artery, coronary vessels, aorta, mitral and aortic valves.

1234-1239. *Series of Pedunculated Masses* obtained from the abdomen of the ox. They are produced by torsion, no doubt, from the peristaltic movement of the intestines. The masses contained fat, fibrous and necrotic tissue, some of which were infiltrated with lime.

GOVERNMENT HOSPITAL FOR THE INSANE:

I. W. BLACKBURN.

This exhibit was intended primarily to show the exhibitor's methods of photographing pathologic specimens, coloring the same, and the making of bromid enlargements for exhibition and teaching purposes. Crayon work on these enlargements with the object of subsequent half-tone or photo-lithographic reproduction for book illustration, was a feature of the work. The photographs exhibited showed a large variety of gross pathologic lesions of the brain and other organs, associated with cases of mental disease. Cerebral arteriosclerosis was illustrated by numerous carefully prepared dissections reproduced by photographs and bromid enlargements. This is the third year that Dr. Blackburn has contributed to the Scientific Exhibit. Those who witnessed his formal demonstration of this artistic collection thoroughly enjoyed it. The exhibit consisted of the following:

1240-1263. *Bromid Enlargements* of various pathologic subjects.

1264-1343. *Eighty Colored Photographs* showing the exhibitor's method of using color in the preparation of subjects for book illustration.

1344-1418. *Seventy-five Photographs* of pathologic subjects illustrating gross lesions of the brain and other organs associated with mental disease.

1419-1426. *Series of Wax Brain Casts.* Prepared by the exhibitor's method.

UNITED STATES BUREAU OF CHEMISTRY:

H. W. WILEY.

This exhibit was in illustration of food adulteration, especially of imported food products. The demonstration of Dr. Wiley, as part of the official program, was made very practical and interesting. The following articles were shown:

1427-1466. *Samples of Food Adulterations,* especially of imported food products. They included the following: Olive oil adulterated with cotton-seed oil. Olive oil adulterated with 15 per cent. peanut oil. Olive oil adulterated with cotton-seed oil and mislabeled as to size of bottle. Strawberry pulp containing salicylic acid and benzoic acid. Egg albumin preserved with salicylic acid. Fruit juice preserved with salicylic acid. Strawberry preserves colored with coal-tar dye. Strawberry preserves colored with cochineal. German sausage preserved with benzoic acid. German sausage preserved with boric acid, the use of which is prohibited by German law. German sausage preserved with aluminium acetate. Strawberry preserves colored with anilin dye, and preserved with salicylic acid. Rhine wine preserved with salicylic acid. Grecian wine preserved with salicylic acid. Orangeade labeled as containing benzoic acid and being colored. Jam labeled as containing benzoic acid and glucose. Misbranded cherries; contains no creme de menthe; colored with an anilin dye. Alleged vegetable color showing a method of labeling. Artificial vinegar, colored with anilin dye and preserved with salicylic acid. Maraschino cherries, colored with anilin dye. Fruit syrup adulterated with glucose. Ginger ale preserved with benzoic acid. Tomato catsup preserved with benzoic acid. Orangeade colored with anilin dye and preserved with salicylic acid. Alleged vegetable color containing coaltar dye. Alleged vegetable color showing method of relabeling. Sauterne wine containing 460 milligrams of sulphurous acid per liter, of which 125 milligrams are free. Sauterne wine preserved with salicylic acid. Sauterne wine containing 500 milligrams of sulphurous acid per liter, of which 110 milligrams are free. Sauterne wine containing 400 milligrams of sulphurous acid per liter, of which 80 milligrams are free.

WILLIAM G. SPILLER, PHILADELPHIA (PRIVATE COLLECTION.)

This collection was a beautiful series of brain specimens illustrating various forms and situations of tumors of that organ. Among these were glioma, endothelioma, sarcoma, carcinoma and fibroma. Dr. Spiller made an interesting formal demonstration of the collection.

1467. *Metastatic Carcinoma* surrounding the optic chiasm and extending into one orbit.

1468. *Endothelioma* growing from the dura. The underlying cortex was found much atrophied.

1469. *Large Fibroma of the Cerebello pontile Angle,* implicating the acoustic and facial nerves.

1470. *Fibroma of Cerebello pontile Angle,* causing internal hydrocephalus.

1471. *Specimen of Meningitis in Plaques.*—Tuberculosis plaques, flat, adherent and confined largely to one parietal lobe and giving the symptoms of brain tumor. This is a very rare form of tuberculosis and does not seem to have attracted attention in this country.

1472. *A Brain Showing Arrest of Development* of the cerebral hemisphere of one side and of the cerebellar hemisphere of the opposite side.

JAY F. SCHAMBERG, PHILADELPHIA (PRIVATE COLLECTION.)

This excellent collection of photographs of dermatological cases was arranged in two groups illustrative respectively of smallpox and cutaneous syphilis.

1473-1502. *Series of Photographs Illustrating Smallpox Eruptions.*

(1-4) An unvaccinated lad showing eruption on the fourth, eighth and eleventh days, and after recovery.

(5-10) Six serial photographs exhibiting the evolution of the smallpox lesions. Photographs show patient on the fourth, sixth, seventh, ninth and fourteenth days of eruption, and after recovery.

(11-12) Smallpox in unvaccinated mulatto. Eruption extensive but not deep seated in the skin, hence but slight scarring. Eyelids and features tumefied.

(13) Severe case showing characteristic distribution of the eruption. Face completely covered with confluent lesions; extremities profusely attacked; comparative sparsity of lesions on the abdomen.

(14-15) These showed the large hemispheric pustules such as are often seen in unvaccinated subjects.

(16) Smallpox in unvaccinated girl of 14. Lesions on the arms exhibited the so called secondary umbilication due to partial collapse of the pustules and sinking in of the centers.

(17) Photographs representing mild and severe attacks in two unvaccinated children. In the mild case the lesions were discrete; in the other confluent, producing swollen and distorted features. The latter patient succumbed.

(18) Well pronounced discrete smallpox in a girl of 16. The lesions were confluent in clusters, due to slight abrasions and congestion of the skin at points previous to the attack.

(19) Hemorrhagic smallpox of the purpuric variety. The patient, a pregnant woman, contracted the disease from a mild at

tack in her father-in-law, the nature of which was not suspected. She gave birth to a living child at term and expired a few days afterward. The eruption consisted of pinhead sized petechiæ covering the entire body with here and there larger ecchymoses.

(20) Infant of patient with hemorrhagic smallpox. The disease was contracted in utero and the eruption appeared on the ninth day after birth. The child was vaccinated on the second day. A tardy vaccine vesicle appeared, but it was not sufficient to prevent the development of fatal smallpox.

(21-22) Two cases of discrete smallpox; one in an unvaccinated young man; the other in an old man not vaccinated since infancy. The lesions in the former were large, full pustules; in the vaccinated patient they were distinctly modified. Vesiculation and pustulation were rapid, crusting soon took place and the crusts dropped off in a week. These cases run a very rapid course and when the modification is pronounced may offer considerable difficulty in diagnosis.

(23) Smallpox in child of 6, showing confluent blackish crusts covering the entire face and presenting a most hideous appearance. The patient was neglected at home and the blackish mask over the face resulted from the drying of the pustular contents of ruptured lesions and the admixture of dirt.

(24) Case showing the profusion of lesions on the hands in severe case of smallpox. The hands become swollen, painful and a source of great distress to the sufferer.

(25) Soles of the feet shown with the epidermal excavations left after the removal of the inspissated pocks. Patients while away their convalescence by digging out with a penknife the encapsulated lesions of the palms and soles.

(26) Extensive scarring of the face and baldness following a severe attack of smallpox. Also lost an eye from severe corneal ulceration.

(27) Extensive pigmentation of the body over the areas occupied by the variolous lesions. After an attack of smallpox the sites of the lesions remain red for several months and in persons of swarthy complexion they may later assume a café au lait tint.

(28) Abscessed eyeball from corneal ulcer.

(29) Gangrene of skin of thigh during third week of attack. Recovery.

1503-1517. *Series of Photographs in Illustration of Cutaneous Syphilis.*

(1) Photograph showing a large chancre of the chin in a young woman who worked in a laundry in a disreputable neighborhood. The lesion is alleged to have resulted from scratching an acne lesion after having handled linen soiled with discharges.

(2) Maculo-papular syphilide of the face in a woman following the roseola.

(3) Severe papulo-tubercular syphilide most prominent on the face. Patient had early symptoms of meningeal involvement, but recovered under vigorous treatment.

(4) Generalized papulo-pustular syphilide of the varioloform type. Patient was sent to the Municipal Hospital as a case of smallpox. Fortunately, she was promptly vaccinated and protected against smallpox.

(5) Acneiform syphilide involving the face, trunk and extremities. This patient had a long standing acne, and it was difficult to tell which of the facial lesions were acne and which were syphilitic.

(6-7) Extensive anulo-papular syphilide on the face of a colored girl. This variety of syphilide is much more common in negroes than whites.

(8) Large papular syphilide which during the epidemic prevalence of smallpox was suspected of being variolous.

(9) Case of syphilide sent to the Municipal Hospital as smallpox, and completely deceived two professors in one of the medical schools. The patient later developed ulcerated lesions on the skin and in the throat and almost perished.

(10) Types of circinate squamous syphiloderm on the palms of the hands.

(11) Ulcerative syphilide on the lateral aspects of the heel of six months' duration.

(12) Tubercular ulcerating syphilide of the face in a woman who grossly neglected early treatment.

(13) Hutchinson's teeth in a child with hereditary syphilis. The test teeth are the upper central incisors. These were cresentically notched and distinctly peg-shaped.

(14) Syphilitic dactylitis in a young man 19 years of age with hereditary syphilis.

(15) From same patient as preceding and showing gumma projecting from the forehead.

J. W. DRAPER MAURY, NEW YORK (PRIVATE COLLECTION).

This exhibit represented research work from the department of surgical pathology at Columbia University. The collection was demonstrated by Dr. Maury in connection with his paper before the Section on Surgery, on "Twine in Lieu of the Elastic Ligature for Performing Gastroenterostomy."

1518-1527. *Series of Gastroenterostomies Performed on Dogs and a Pig.*—These experiments seemed to prove the advantage of twine over the elastic ligature. Twine cuts through when inserted by the triangular stitch, as a result of deprivation necrosis, while the elastic stitch as inserted by Dr. McGraw cuts through by simple pressure.

F. C. BUSCH, BUFFALO (PRIVATE EXHIBIT).

1528-1530. *Series Showing Successful Grafting of the Suprarenal in the Kidney of a Rabbit.*

The grafts apparently carried on the suprarenal function after all other suprarenal tissue had been removed. These specimens were demonstrated by Dr. Busch as part of the official program.

MYRON METZENBAUM, CLEVELAND (PRIVATE EXHIBIT).

1531-1580. *Pictures Representing the Results of Typical Experiments with Radium*, thorium, uranium, pitchblend, and other radioactive substances, and showing their action on photographic plates. Some pictures were shown indicating the effect of metallic aluminium on photographic plates. Photographs were shown of a case of very extensive lupus healed by the aid of radium after the case had been treated unsuccessfully for a year with the *x*-rays.

JOHN G. WILSON, MONTROSE, PA. (PRIVATE EXHIBIT).

1581. *Radiogram* of the hand and forearm.

1582. *Radiogram* of shoulder, showing fracture of the surgical neck of the humerus.

These were remarkably clear and perfect *x*-ray pictures.

The Public Service.

Army Changes.

Memorandum of changes of stations and duties of medical officers, U. S. Army, week ending Sept. 10, 1904:

Gregory, Junius C., asst.-surgeon, reports for temporary duty at Fort Miley, Cal.

Godfrey, G. C. M., asst.-surgeon, granted seven days' leave of absence.

Reilly, John J., asst.-surgeon, sick leave of absence extended thirty days.

Rockhill, Edward P., asst. surgeon, ordered to proceed from Presidio of San Francisco to Fort Miley, Cal., for temporary duty.

Mabray, William C., contract surgeon, granted one month's leave of absence from Sept. 4, 1904.

Navy Changes.

Changes in the medical corps, U. S. Navy, for the week ending Sept. 10, 1904:

Urie, J. F., surgeon, detached from the *Missouri* and granted sick leave for three months.

Drake, N. H., surgeon, detached from the *Lancaster* and ordered to the *Hancock*.

Guest, M. S., P. A. surgeon, ordered to the *Lancaster*.

DeValin, C. M., P. A. surgeon, unexpired portion of leave revoked; ordered to duty at the Naval Hospital, Philadelphia.

Marine-Hospital Service.

Official list of the changes of station and duties of commissioned and non-commissioned officers of the Public Health and Marine Hospital Service for the seven days ending Sept. 7, 1904:

Brooks, D. D., surgeon, granted leave of absence for thirty days from Sept. 2 on account of sickness.

Hobdy, W. C., P. A. surgeon, granted leave of absence for seven days from Aug. 20, 1904, under the provisions of Paragraph 191 of the Regulations.

Kerr, J. W., P. A. surgeon, granted leave of absence for four days from Sept. 5, 1904, in accordance with the provisions of Paragraph 191 of the Regulations.

Robinson, D. E., P. A. surgeon, granted leave of absence for two days from Sept. 6, 1904, under the provisions of Paragraph 191 of the Regulations.

Hunt, Reid, pharmacologist, detailed to represent the service at meeting of American Pharmaceutical Association at Kansas City, Mo., Sept. 5-10, 1904.

Ballard, J. C., A. A. surgeon, granted leave of abence for seven days from Sept. 5, 1904.

Mackall, B. McV., A. A. surgeon, granted leave of abence for seven days under the provisions of Paragraph 210 of the Regulations.

Roehrig, A. M., pharmacist, granted leave of absence for thirty days from Sept. 12, 1904.

Stearns, W. L. pharmacist, granted leave of absence for twenty nine days from Sept. 6, 1904.

O'Gorman, T. V., pharmacist, department letter of Aug. 10, 1904 granting leave of absence for thirty days from Aug. 18, 1904 amended so that said leave shall be effective from Aug. 24, 1904.

La Grange, J. V., pharmacist, granted leave of absence for twenty three days from Sept. 15, 1904.

Holsendorf, B. E., pharmacist, department letter of Aug. 6, 1904 granting leave of absence for thirty days from Sept. 1, 1904 amended so that said leave shall be for twenty-four days only.

BOARD CONVENED.

Board convened to meet at Washington, D. C., Oct. 3, 1904, for the examination of candidates for appointment as assistant surgeon in the service. Detail for the board Surgeon W. P. McIntosh, chairman; Surgeon G. M. Guiteras; P. A. Surgeon John F. Anderson, recorder.

PROMOTIONS.

Assistant Surgeon D. H. Currie commissioned as P. A. surgeon, to rank as such from July 28, 1904.

Assistant Surgeon J. M. Holt commissioned as P. A. surgeon, to rank as such from July 27, 1904.

Assistant Surgeon F. E. Trotter commissioned as P. A. surgeon to rank as such from July 27, 1904.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon General, Public Health and Marine-Hospital Service, during the week ended Sept. 9, 1904:

SMALLPOX—UNITED STATES.

District of Columbia: Washington, Aug. 27-Sept. 3, 1 case.

Florida: Jacksonville, Aug. 27-Sept. 3, 1 case.

Illinois: Chicago, Aug. 27-Sept. 3, 5 cases.

Louisiana: New Orleans, Aug. 27-Sept. 3, 4 cases, 1 case imported.

Massachusetts: Aug. 27-Sept. 3, Lawrence, 1 case; North Adams, 22 cases, 1 death.

Michigan: At 51 localities, Aug. 20-27, present.

Ohio: Cincinnati, Aug. 19-26, 1 case.

Pennsylvania: Aug. 27-Sept. 3, Philadelphia, 1 case; Williamsport, 1 case.

Tennessee: Aug. 27-Sept. 3, Memphis, 1 case; Nashville, 3 cases.

SMALLPOX—FOREIGN.

Brazil: Rio de Janeiro, July 24-Aug. 7, 549 cases, 210 deaths.
Canada: Winnipeg, Aug. 13-20, 1 case.
France: Paris, Aug. 13-20, 8 cases, 1 death.
Great Britain: Glasgow, Aug. 19-26, 2 cases; Aug. 13-20, London, 2 cases; Nottingham, 2 cases; Manchester, Aug. 6-20, 6 cases.
India: Bombay, Aug. 2-9, 8 cases; Karachi, July 31-Aug. 7, 3 cases.
Italy: Palermo, Aug. 13-20, 37 cases, 4 deaths.
Mexico: City of Mexico, Aug. 14-21, 12 cases.
Russia: St. Petersburg, Aug. 6-13, 7 cases, 2 deaths; Warsaw, July 16-30, 44 deaths.
Spain: Barcelona, Aug. 10-20, 8 deaths.
Turkey: Alexandretta, Aug. 6-13, 6 deaths; Beirut, Aug. 6-20, present; Constantinople, Aug. 7-21, 16 deaths; Smyrna, Aug. 7-14, 2 cases.

YELLOW FEVER.

Brazil: Rio de Janeiro, July 24-Aug. 7, 6 cases, 2 deaths.
Ecuador: Guayaquil, Aug. 3-10, 2 deaths.
Mexico: Aug. 20-27, Coatzacoalcos, 5 cases, 1 death; Vera Cruz, 4 cases; Aug. 21-27, Merida, 3 cases, 2 deaths; Tehuantepec, 1 death.

CHOLERA.

India: Bombay, Aug. 2-9, 34 deaths; Calcutta, July 30-Aug. 6, 4 deaths.
Persia: Teheran, Aug. 6, nearly extinct.
Turkey: Bagdad and vicinity, July 16-23, 314 cases, 138 deaths.

PLAGUE.

Brazil: Rio de Janeiro, July 24-Aug. 7, 15 cases, 6 deaths.
China: Amoy, July 16-30, 15 deaths estimated.
Egypt: July 30-Aug. 6, 12 cases, 7 deaths.
India: Bombay, Aug. 2-9, 5 cases, 51 deaths; Calcutta, July 30-Aug. 6, 8 deaths; Karachi, July 31-Aug. 7, 5 cases, 2 deaths.
Peru: Eten, Sept. 1, present.

Society Proceedings.

COMING MEETINGS.

AMERICAN MEDICAL ASSOCIATION, Portland, Ore., July 11-14, 1905.

International Congress of Arts and Science, Department of Medicine, at Universal Exposition, St. Louis, September 19-25.
Medical Society of the State of Pennsylvania, Pittsburg, September 27-29.
Colorado State Medical Society, Denver, October 4-6.
Idaho State Medical Society, Lewiston, October 6-7.
Tri-State Medical Society of Alabama, Georgia and Tennessee, Chattanooga, October 12-14.
Assn. of Military Surgeons of the U. S., St. Louis, October 10-15.
Mississippi Valley Medical Association, Cincinnati, October 11-13.
Vermont State Medical Society, Rutland, October 13-14.
New York State Medical Association, New York, October 17-20.
Medical Society of Virginia, Richmond, October 18-21.

CALIFORNIA ACADEMY OF MEDICINE.

Meeting held in San Francisco, Aug. 23, 1904.

The President, Dr. T. W. Huntington, in the Chair.

Bacterial Etiology of Gallstones.

DR. LARTIGAU described his experimental studies on the production of gallstones. At least two important conditions must be fulfilled in order to produce gallstones experimentally. In the first place it is necessary to infect the bile passages with organisms of low virulence, for if virulent organisms are used a serious infection results, but no gallstones are produced. The second factor necessary is an obstruction to the outflow of bile, for without this no gallstones will result from the infection. By complying with these two conditions Dr. Lartigau was able to produce gallstones by infections with a variety of organisms, among them the colon bacillus, the typhoid bacillus, the hog cholera bacillus, the bacillus pyocyaneus, staphylococci, and even tubercle bacilli. Stagnation of the bile was produced by placing bits of cotton in the mouth of the gall bladder and by partially ligating the duct. It made little difference which organism was used provided the above-named conditions were complied with, but it seemed as if the motile bacteria were more likely to give rise to stones. Pure cultures and mixed cultures were equally effective. The shortest time necessary to produce a stone was six weeks, but usually it took from four to twelve months. The longer the time, the larger was the stone. The reaction of the bile made but little difference. After infection the bile became more watery and of a lighter color. No relation could be discovered between the nature of the infection and the chemical character of the stone. The introduction of sterile material such as silk or sand did not give rise to gallstones. It seems probable that the infection in man is by way of the portal vein and not through an ascending infection of the biliary passages. A number of facts favor this view. Adami and Ford have elaborated the theory that there is a constant passage of bacteria through the mucosa of the intestines. The bacteria of cholecystitis are not those commonly found in the duodenum. If the common duct be tied, we get an infection of the bile passages. Finally, if an enteritis be caused by the administration of arsenic or bichlorid of mercury, and if then the animal is fed with some easily recognized organism, as the *Bacillus prodigiosus*, this organism may be found in the bile passages. From a consideration of these facts it seems not only possible, but probable, that the infection of the gall bladder in man is by way of the portal vein.

DISCUSSION.

DR. W. W. KERR asked: What is the condition of the wall of the gall bladder in these experimental animals? Is it not possible that carcinoma of the biliary passages might give rise to gallstones? It would produce the necessary stasis and the diseased condition of the wall might favor the formation of stones. The ordinary duration of a carcinoma would also allow time for the formation of stones. Cholesterin stones are probably produced by a perverted secretion of the mucous membrane of the gall bladder.

DR. GEORGE BLUMER mentioned Cushing's suggestion that agglutinated clumps of typhoid bacilli might form the nuclei of gallstones, and asked if there was any evidence of such a process in the present series of experiments. Human stones differ from those produced experimentally in that they are present in very great numbers in most cases, and all the stones seem to be of about the same size.

DR. HUNTINGTON asked if normal bile is sterile. The stasis is an important factor in the infection of such a series of tubes as the bile passages. It has been shown, for example, that the injection of virulent bacteria into the normal appendix is without effect, whereas if the appendix be ligated a severe appendicitis will result. Recurrence after the removal of gallstones is not very common. According to Mayo, it occurs in from 5 to 6 per cent. of all cases.

DR. LARTIGAU stated that the gall bladders in his animals showed a thickened mucous membrane, with some cicatricial tissue and some necrosis. Many gall bladders containing stones show adenomatous growths resembling carcinomata. He was not prepared to say what effect the agglutination of bacilli might have on the formation of gallstones. As is the case with many other fluids in the body, ordinary cultures made from the bile are usually sterile, but by special methods, using large quantities of bile in large amounts of bouillon, a few organisms can usually be demonstrated to be present even in normal bile.

Maldevelopment of the Ear.

DR. C. M. COOPER exhibited a young man who complained of dizziness. The left external ear was small and deformed, the external auditory canal closed. In such cases the middle and internal ears also are usually poorly or not at all developed. In this case, however, the eustachian canal is open and the middle ear can be inflated. An examination with the *x*-ray shows the presence of the semicircular canals and a fully developed mastoid bone. The right side of the tongue is somewhat smaller than the left, and when protruded the tongue deviates somewhat to the right. The right side of the palate is paretic. The posterior cervical glands are enlarged. The condition is probably due to a congenital syphilis.

DR. STAPLER asked about the possibility of the deformity of the ear being a sign of degeneracy. The general intelligence of the patient should be examined and his family antecedents gone into.

DR. COOPER stated that the boy was quite bright and that the paresis in his mouth was typical of congenital syphilis.

A New Method of Examination with the X-Ray.

DR. C. M. COOPER described a new method of examining the abdomen with the *x*-ray. The patient lies face downward on a piece of canvas and the *x*-ray is placed beneath him. The colon is then blown up with gas and at the same time he is exam

ined with the fluoroscope. By this method the spleen and kidneys can be seen and tumors of these organs differentiated from those of neighboring organs.

DR. H. C. MOFFITT stated that he could confirm the value of Dr. Cooper's method. He believed it more satisfactory than the older method of distending the colon and then using percussion to differentiate the spleen from the kidney. It may prove of great service in the examination of the left hypochondrium.

THE OBSTETRICAL SOCIETY OF PHILADELPHIA.

Regular Meeting, June 2, 1904.

The President, Dr. Richard C. Norris, in the Chair.

Report of a Case of Ovarian Cyst with Retained Menstrual Blood.

DR. MARIE K. FORMAD reported a patient, 45 years of age, single, who had never menstruated and always had a large abdomen, but suffered no discomfort nor pain from it. Six or seven weeks before coming to the hospital she noticed that the abdomen became rapidly larger and the skin tense. Her feet began to swell, and she had dyspnea when going upstairs. Otherwise she felt well and worked at her trade, that of an operator in a hosiery mill, until three days before she entered the hospital, April 28, 1904. Abdominal inspection showed enlargement of the abdomen, most prominent on the left side; dullness on percussion to and above the umbilicus. On palpation, the mass fluctuated, fluid seemed to be encysted, as there was no bulging in flanks, nor change in location of tumor with patient in different positions. The right side was tympanitic to median line below the umbilicus. The vaginal examination showed vagina very short; absence of cervix. Bulging of both fornices. Uterus not palpable. A clinical diagnosis was made of bicornate uterus with retained menstrual secretion. Correct diagnosis: Multilocular ovarian cyst. Complete congenital atresia of the uterus. Left horn of uterus was dilated and ran out into the fallopian tube and directly passed into a single loculus of the multilocular cyst. Right tube ended in blind extremity. In the cornu just outside of the occlusion a tubal calculus was found.

DISCUSSION.

DR. L. J. HAMMOND—This very instructive case is the exception, not the rule, in ovarian cystoma, the typical fluid found being characteristically straw colored. This chocolate-colored content is not uncommonly found in the broad ligament cysts of the paroöphoritic type. It is instructive, therefore, to note this condition of papillomatous change existing in ovarian cysts. These masses, as described in this specimen, might readily account for the blood-mixed fluid found in such large quantity in the cyst.

DR. FORMAD—This is not a broad ligament cyst, but an ovarian cyst. This was shown by the microscopic examination.

The Ultimate Results of Induced Labor for Minor Degrees of Pelvic Contraction.

DR. RICHARD C. NORRIS read a paper reporting in detail thirty cases, with their results, for mother and child, the degrees of contraction varying in the conjugate diameters between 8 and 10 cm. There was neither maternal mortality nor morbidity. The infantile mortality was 10 per cent. after following the histories of the children subsequent to their leaving the hospital. Dr. Norris took issue with those who recommend hasty cesarean section for these grades of deformity. He quoted Williams' statement that hardly more than 50 per cent. of the infants survive the first few months of life, and said that that statement could only be true of induced labors for high grades of contraction, a field no longer to be tested by induced labor, but by the elective cesarean section. He also referred to Reynolds' statement that cesarean section is indicated when with any definite pelvic contraction there is a history of repeated childbirths during previous operative labors and for healthy primiparæ with conjugates between three and four inches, that the amount of difficulty which will occur should be estimated by observations of the progress of labor; but that the possibility that an indication for the cesarean section may arise should always be borne in mind in such a case, and that all the preparations for it should be made beforehand, or at least during the first stage of labor. Norris referred to his tables and asserted that it was in just such cases that his best results were obtained by induction of labor, not more than four weeks, and usually two weeks before term. The assistance given Nature by skillful induced labor, and the employment of the Trendelenburg-Welcher posture, had repeatedly avoided the necessity for a difficult operative delivery which ordinarily gives the high fetal mortality. He discussed the difficulties of accurate estimation of the duration of pregnancy and outlined the plan he followed to eliminate, so far as possible, the induction of labor at too early or too late a period of pregnancy. An analysis of his tables of thirty cases was presented and a plea made for the adoption of this method of treatment in place of the hasty and oftentimes spectacular cesarean section which, in his judgment, had sometimes been an exhibition of experimental and unnecessary surgery.

DISCUSSION.

DR. GEORGE M. BOYD—While Reynolds may do a long series of cesarean sections, and Norris still another series of induction of premature labor without death, we do have cases of death from cesarean section and from induction of premature labor. Dr. Norris is to be congratulated on his results, which show a much lower fetal mortality than many of us have enjoyed. It has been the high fetal mortality which has caused many to refrain from performing the induction of premature labor. In my own experience in the Lying-in Charity for fifteen years, I confess that I have only in exceptional cases resorted to induction of labor, because of my inability to measure the length of gestation. It seems to me there must almost always exist a latitude of two or three weeks, and it is just that latitude which makes the operation uncertain. If the operation is of any real benefit it must be done sufficiently early. Then, again, some patients will go into labor right after the introduction of one or two bougies, and other patients not until after many hours. In some cases I have seen the unfortunate rupture of the membranes with the best operators. There is some danger also of striking the placental site, and some slight danger from infection, so that fearing the early rupture of the membranes, I have preferred to allow my patients to go to term. I feel that the only really accurate way of measuring the pelvis is by the test of labor and noting whether the head is or is not adapting itself to the birth canal. So far as my experience goes I feel that the patient would be best served by permitting her to go to term, and after the test of labor, resorting to the operative measures that seem best indicated.

DR. DANIEL LONGAKER—It seems to me that the indications for this particular operation are clearly set forth in limiting the induction of premature labor to the lesser degrees of pelvic contraction. Going back some considerable time in my own experience, I remember different cases in which the operation of induced premature labor was ill-advisedly applied to degrees of pelvic narrowing which were entirely too great to permit of even the safe delivery of a child that had only reached the twenty-eighth week of gestation. For instance, a child that had not attained a weight of more than five and a half pounds, and, as nearly as we could determine, a period of gestation of from twenty-eight to thirty weeks, with a difficult extraction in a woman whose direct conjugate was estimated to be 7½ cm., or a little under, too great a degree of contraction to permit safe extraction, and the child had to be delivered by version. If one selects the operation for that class of cases it must fall into disrepute. That particular woman was safely delivered twice after that by symphysectomy of a living baby of large size at term. The cases in which induced premature labor will have brilliant results are the lesser degrees of contraction, the direct conjugate being not under 8 cm. I do not know whether I am correct in my conclusion, but my impression is that in these cases there is a tendency, for some reason which I do not care to discuss, to protracted gestation. I have knowledge of cases

which have been carefully studied in which the gestation has gone to almost 300 days, 28 to 30 days beyond the computed time, and where the size of the child was an additional evidence that it had been carried beyond the average time. I think that where we have reason to know from external measurements, and from the history of preceding labors that there is pelvic contraction, it behooves us to watch the case with extreme care and to estimate not only the size of the pelvis, but the size of the fetal head, which can best be obtained by the Miller method. In a case of this kind we should not allow the gestation to be protracted, and much will be gained by timely interference.

DR. WILLIAM R. NICHOLSON—It strikes me that the induction of premature labor is one of our most useful obstetrical procedures, since the smaller grades of pelvic deformity are the common ones met with. It seems to me that to allow a woman with a contracted pelvis to go into labor with her first child, to determine whether she can give birth to that child spontaneously is in certain cases a pretty dangerous method to follow, unless the patient be of the best class of society, since in certain grades of practice it is not possible to do cesarean section in private houses; and it strikes me that a method which offers an alternative in the largest number of cases, is a very valuable thing to have in one's possession. I think Dr. Boyd has stated all the possible objections. The only thing that occurred to me in listening to him was that a man who was unfit to put in a bougie, so far as sepsis was concerned, was unfit to do a cesarean section. While I have not induced labor 100 times, I have never seen the slightest difficulty in regard to the rupture of the membranes, and have never had a case which has shown temperature after the bougie was in place, unless the induction was prolonged and the membranes ruptured.

DR. R. C. NORRIS—We talk about the difficulty of estimating the duration of pregnancy. I would like to ask Dr. Boyd when he predicts for his patients the probable date of confinement how many times his patients go three or four weeks over that time. We do miss it once in a while, but in my hospital and private practice I find quite accurate estimates are made. When the estimates have been inaccurate I have explained the error in two ways: either the woman herself has made a mistake in her recollection of her last period and of the date of quickening, or she was that type of woman who conceives just before her first missed period rather than just after her last period. The estimation of the duration of pregnancy is not difficult when we have a reliable history. It is usually in the lower classes that the women forget or disregard the date of their last sickness, and in these cases I admit it is often difficult to determine the duration of pregnancy solely by fetometry. You can not do so as accurately as by the history of menstruation and quickening. All these facts should harmonize: the history of menstruation and of quickening, and the estimated size of the child, and height of fundus. I have known the advocates of hasty cesarean section to make the same error in calculation and to deliver six-pound babies that have to be put in incubators. The plea of my paper is emphasized by Dr. Longaker when he speaks of confining our discussion to minor degrees of pelvic narrowing. The period of time required for the termination of an induced labor has varied from 6½ to 64 hours. The rubber bag is of the greatest value. The bougies used alone often will not be efficient. I remember Dr. Parvin on one occasion putting in a series of bougies which remained for a week or more without bringing on pains. In cases of that kind, the rubber bag is essential, and in my cases I accomplished the result in an average of 29 hours, and without danger of sepsis. Premature rupture of the membranes when passing the bougie carries with it a certain amount of danger. Partial separation of the placenta I have noticed several times, but never with an ill effect on mother or child. The danger of infection is a matter of individual equation, and depends on one's aseptic technic. The test of labor is justifiable in most degrees of pelvic deformity, and I do not see any disadvantage if the labor is brought on two to three weeks before time. You have a smaller baby's head, and if the test shows that the mother is going to fail, you are in a better position to do version or use the forceps with a baby two weeks under its time than with a baby ten days or two weeks over its time. I have read nothing in literature, nor heard remarks from men doing frequently the cesarean section for the same grade of cases that would make me change my position, and my own records carefully studied have convinced me more than ever that many cesarean sections can be safely avoided by skilled induction of labor.

Therapeutics.

[Our readers are invited to send favorite prescriptions or outlines of treatment, such as have been tried and found useful, for publication in these columns. The writer's name must be attached, but it will be published or omitted as he may prefer. It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in everyday practice. Proper inquiries concerning general formulae and outlines of treatment are answered in these columns without allusion to inquirer.]

Muscular Cramps.

Revue Medico-Pharmaceutique suggests the following formula:

℞. Vini opii
Chloroformi
Olei hyoeyami, āā ..... ℥i 30

M. Sig.: Apply locally with friction. If relief is not soon experienced, sodium bromid should be administered internally.

Syphilis.

In *Lyon Medicale* Molle gives the following prescription of Simonet for secondary manifestations:

℞. Hydrarg. chloridi corrosivi
Sodii chloridi, āā ..... gr. xxx 2
Aquæ dest. ..... m. xc 6
Pulv. gluten ..... ℥ss 15
Ext. opii ..... gr. xxss 1 50
Glycerini ..... m. xlv 3

M. Ft. pil. No. cc. Sig.: Two pills three times daily.

INFANTILE SYPHILIS.

Mercurial frictions, according to *Journal des Practiciens*, are well borne by children. The Neapolitan ointment is made as follows:

℞. Metallic mercury ..... 500 parts.
Benzoinated lard ..... 460 parts.
White wax ..... 40 parts.

M. Sig.: One to five drams to be rubbed into the skin. For an infant the ointment should be rubbed in with a piece of flannel on a different part of the abdomen every morning. The ointment should be allowed to remain. After a month of such treatment, it should be suspended for a week and then recommenced, and this procedure should be kept up for a year.

Local lesions may be treated with:

℞. Hydrarg. ammoniati ..... gr. xlv 3
Petrolati ..... ℥i 30

M. Sig.: Use locally.

After one year's treatment potassium iodid should be given 1½ grains (10 centigrams) daily for three weeks, ten days' intermission, then three more weeks of treatment. Every three months, inunction should be resumed for two weeks.

Prophylaxis is important; careful choice of wet nurse, forbidding of kissing, use of cow vaccine exclusively, with aseptic instruments.

In hereditary syphilis, at the end of a year of inunction, half to one teaspoonful may be given daily of Gilbert's syrup.

℞. Hydrarg. iodidi rubri ..... gr. ivss 30
Potassii iodidi ..... ℥i 30
Aquæ dest. ..... ℥i 2/3 50
Syrupi cinchonæ ..... ℥xxxi 2/3 920

M. Do not filter. Sig.: One half to one teaspoonful daily.

At the end of the second year, 3 grains (20 centigrams) of potassium iodid may be given daily.

The liquor of Van Swieten is sometimes substituted:

℞. Hydrarg. chloridi corrosivi .....1 part.
Aquæ dest. .....900 parts.
Spiritus rectificati .....100 parts.
M. Dissolve the sublimate in the alcohol, then add the water. Sig.: Ten drops daily for each month of age.

The prophylaxis of hereditary syphilis consists of the treatment of the parents, of the syphilitic pregnant woman, discouragement of marriage between syphilitics, and the nursing of the syphilitic child by its mother, never by a nurse.

Neuralgia.

Revue Medico-Pharmaceutique recommends the following formula as valuable in neuralgia:

℞. Quinin valerianatis .....gr. iss		10
Extracti hyoscyami .....gr. 3/10		02
Extracti cinchonæ .....gr. ¾		05

M. Ft. pil. No. i. Sig.: Take two to four such pills daily.

Eye Bruises (Black Eye).

Merck's Archives recommends the following:

℞. Acidi acetici dil. .....ʒv	150	
Tincturæ arnicæ		
Ammon. chloridi, āā .....ʒi	30	
Aquæ dest. .....ʒv	150	

M. Ft. lotio. Sig.: Apply locally.

Cystitis.

The *Critical Review* attributes the following prescription to Keyes, who recommends it as of value in the treatment of acute cystitis:

℞. Liq. potassæ .....ʒiv	16	
Ext. hyoscyami fl. .....ʒvi	25	
Syrupi aurantii cort. .....ʒiii	90	
Aquæ cinnamomi q. s. ad .....ʒvi	180	

M. Sig.: Teaspoonful in water three times a day.

Pepper recommends the following:

℞. Potassii bromidi		
Sodii bromidi, āā .....ʒii	8	
Ext. belladonnæ .....gr. iv		25
Ext. buchu .....ʒi	4	
Syrupi sarsap. comp. q. s. ad .....ʒiv	120	

M. Ft. sol. Sig.: Tablespoonful three times a day after meals.

Diet in Diseases of the Liver.

Linnosier (*Bull. et Mem. de la Societe de Therapeutique*, February, 1904) says that it is necessary to exercise care in regard to quantity as well as quality of diet in the treatment of liver diseases. Meats are to be more or less completely excluded, according to the severity of the disease. Lean ham and fresh fish are the most suitable meats. Milk is an excellent article of diet; there is no necessity of excluding the fat from the milk, as it is commonly advised, because the fat, on account of its emulsifying properties, is in many cases well tolerated. Fresh vegetables (peas, beans, salads, etc.) are to be recommended in cases where digestion is as good as normal. Turnips and cabbage, etc., are not to be permitted. Bread and dishes prepared with flour may be given to some extent; foods, however, the ash of which is rich in phosphoric acid, are not to be permitted, as they increase the already existing acid intoxication. Potatoes, the ash of which is alkaline, are allowed. Ripe fruits are suitable on account of their laxative powers and their contents of vegetable acid salts. The latter are changed to carbonates, and therefore have a favorable influence on the existing hyperacidity. Water is the best drink, alkaline waters when there is hyperacidity. Small quantities of coffee may be allowed, but chocolate, on account of being rich in fats and oxalic acid, is to be prohibited.

Constipation in Infants.

Infants who are being fed exclusively on milk, either breast or bottle, which is low in percentage of fat are very likely to suffer from constipation. Rotch has noticed that when breast milk contains a low percentage of fat and a high percentage of proteids the stools are feeble and watery. Boiling and pasteurizing are very apt to cause constipation. In breast-fed babies it is best to correct the constipation by proper attention to the mother's diet in order to increase its fat. First it is important to secure undisturbed rest for the nurse at night. She should be relieved of the care and nursing of the infant during the night and the bottle should be substituted if necessary. Fresh air should be obtained in abundance by driving and walking when she is able. Thomas of New York considers massage of the breast as one of the most powerful stimulants to the secretion of milk. It should be done with great care and gentleness, and every precaution taken against infection. A mild antiseptic ointment may be used with the massage, and it should be done two or three times a day for ten minutes at a time. The diet should be abundant, with a large amount of milk and meat, especially beef. If anemia is present iron should be given. If drugs must be used to overcome the difficulty the following are to be recommended:

Milk of magnesia 3ss-3i	2.-4	
Or:		
Olive oil 3i	4	
Or:		
Sodii phosphate .....gr. ii	12	

Other drugs recommended, but of less value than the above, are:

Calcined magnesia .....gr. viii-x	50-.65	
Or:		
Aromatic fl. ext. cascara sagrada .m. v-xxx	.30-2	
Or:		
Pulv. glycerrhizæ comp. .....gr. x-xv	.65-1	

When only local stimulation of the rectum for defecation is required glycerin, gluten, or soap suppositories may be used. Enemata of soapsuds and water, or equal parts of water and glycerin are very efficacious to effect temporary relief. Large injections of fluid (more than 2 to 4 ounces should be avoided): they may produce overdistention and paresis. In bottle-fed infants the first attention should be given to the proper modification of the milk so that the correct percentage of fat obtains. The other treatment as outlined above may likewise be used in these cases. After six months orange juice may be added to the diet and a little later the juice of stewed prunes. Massage of the abdomen in certain cases of obstinate constipation has been a most successful treatment.

Work as a Therapeutic Measure.

This is the subject of an editorial in the *Boston Medical and Surg. Jour.* "Among the many rational therapeutic measures which have been advocated of late years, small attention has been paid to the efficacy of work." Rest, exercise, massage, electricity, hydrotherapy, etc., have been used with much success and enthusiasm by many, both within and without the profession. The so-called "rest treatment" introduced by Dr. Weir Mitchell has been demonstrated beyond doubt to be most successful in appropriate cases. It has undoubtedly many times been misused and indiscriminately used and consequently has given its best results in the hands of its founder. "In view, however, of all the time and attention which has been given to treatment by so-called rational methods, it is somewhat extraordinary that no systematic attempt has been made to systematize a method of treatment which shall have work, either physical or mental, as its fundamental principle. Of course physicians are continually advising physical exercise and physical labor, but with the possible exception of Moebius no one has mapped out a work cure in the same systematic fashion as the rest cure." The author considers that invalidism is quite often due to other causes than those for which rest and recreation could work a cure. It is a very rare experience to come in contact with a person who is really suffering from overwork. The work may be uncongenial, the hours long, and physical strength insufficient to meet the demands. It is the author's belief that the lack of suitable employment is rather the source of the various failures which are familiar to every physician. If it be true that overwork is rare, and that the moral and physical stimulus which work gives is desirable, systematic treatment by work is as rational, as systematic treatment by other means. Employment of the mind, as well as the body, is conducive to health, and physicians would accomplish far more definite results if they insisted on the necessity of work with anything like the frequency that they insist on the necessity of rest.

Antidiarrhea Mixture.

The following formula has been used in certain cases in the King's County (N. Y.) hospitals:

R.	Morphin acetatis	gr. i	06
	Plumbi acetatis	gr. xii	75
	Aquæ camphoræ	℥ii	60

M. Sig.: One teaspoonful every three to four hours.

Hemorrhoids.

The following formula has found favor in the hospitals of the Department of Charities of New York:

R.	Morphin oleatis	1 part.
	Camphoræ	2 parts.
	Olei sassafras	4 parts.
	Resinæ	8 parts.
	Ceratæ flavæ	16 parts.
	Adipis benzoated	24 parts.

M. Sig.: To be applied on lint.

The foregoing is best compounded by melting the wax, resin, and benzoate lard together by gentle heat, and digesting the camphor in this until it is dissolved. While the mass is cooling and before it solidifies, add the morphin oleate and sassafras oil, and mix thoroughly.

An Inhalant in Respiratory Diseases.

R.	Iodin	grs. x-℥i	.65-4
	Carbon disulph.	℥i	30
	Guaiacol	℥i	4

M. Sig.: To be used as an inhalation in the various respiratory disorders, including the early tubercular stages, bronchitis, asthma, etc.

Drs. Stovall and Twitty, Columbia, Ala., send the above formula, and say they have been using it in their practice for about seven years, and that the results from its application have been very favorable, so much so that they have come to regard it as a specific in that class of post-grippal coughs which have such a direct tendency toward the tubercular state. The addition of guaiacol is advantageous when not objectionable to the patient. The variable quantity of iodin is due to differences in effects and requirements as regards individual cases. The weaker solution is for catarrh of the upper tract and for nasal inhalation; the stronger in the deeper seated disease and for mouth inhalation. The inhaler must be of glass; its style depending largely on the inspiratory powers of patients. When the lung capacity is good enough the simple tube inhaler with gauze inserted will usually suffice. In other cases the bulb vaporizer will be required.

Medicolegal.

Death from Disease Caused by Wound; Dying Declarations.—The Supreme Court of Alabama holds, in Pitt vs. State, that if death resulted immediately from a "bowel trouble," which had been brought on or superinduced by the gunshot wound charged or the amputation of the deceased's leg, rendered necessary by the gunshot wound, the fact that the "bowel trouble" was the cause of death would furnish the accused no protection against a charge of unlawful homicide. It also holds that the fact that the deceased asked that a physician be sent for was not in itself and alone sufficient to affect the admissibility in evidence of his dying declarations, as showing a hope of recovery, it having been shown that he was at the time suffering with severe pain in his bowels, and it being natural that he should want the physician to allay his suffering.

Physicians and Certain Opticians Not Merchants.—The Supreme Court of Iowa says, in City of Waukon vs. Fisk, that a surgeon specialist who treats deformities of the body by the use of straps and braces made according to his measurements would not be classed as a merchant simply because he habitually supplies his patients with the necessary apparatus by orders on the manufacturer, and receives or collects payment therefor. Neither would we so class a physician who receives a commission on prescriptions filled by a pharmacist. Likewise, it holds that a traveling optician who does not carry spectacles or eyeglasses for sale, but examines and tests the eyes of persons applying to him therefor, and writes the description of the glasses required on a "prescription blank," which is mailed to a dealer, in Chicago, who fills the order by grinding and preparing the glasses according to the directions, and sends them direct to the customer, is not a merchant, and can not be subjected to a license tax as one, by a city authorized to define by ordinance who shall be considered transient merchants; to regulate, license and tax their sales. The court says that such an optician's business may not rank professionally with that of a surgeon or physician, but his business bears a close relation to theirs, in that he assumes to diagnose, and, to a certain extent, remedy, a physical defect. His skill and experience in this respect constitute his capital and his "stock in trade," and the fact that he finds his compensation in a profit or commission on the apparatus by which he aids defective sight does not make him a merchant.

Compulsory Vaccination of School Children.—The Supreme Court Commissioners of California say, in French vs. Davidson, that in the case of Abeel vs. Clark, 84 Cal. 226, the title of the "Act to encourage and provide for a general vaccination in the state of California" was shown to be in substantial compliance with the requirements of the constitution, and many authorities were cited illustrating its sufficiency. The uniform operation of the act on a natural class of persons, to wit, school children, was asserted, and its compliance with the constitution in that behalf was declared. That the vaccination act came within the police power of the legislature of the state, and that it was for the public good, was clearly maintained by the opinion. It was also shown that the act in no way impaired any constitutional provision against special legislation. The soundness of that decision has never been questioned, so far as the commissioners have been able to ascertain. The case has been frequently cited, and the principle of it approved, both in California and in other states. The legislature, the commissioners go on to say, no doubt was of opinion that the proper place to commence in the attempt to prevent the spread of a contagion was among the young, where they were kept together in considerable numbers in the same room for long hours each day. It needs no argument to show that, when it comes to preventing the spread of contagious diseases, children attending school occupy a natural class by themselves, more liable to contagion perhaps, than any other class that we can think of. This effort to prevent the spread of contagion in a direction where it might do the most good was for the benefit and protection of all the people, and there is in it no element of class legislation. It in no way interferes with the right of the child to attend school, provided the child complies with its provision. Police regulations generally interfere with the liberty of the citizen in one sense, but it is no valid objection to a police regulation that it prevents a person from doing something that he wants to do, or that he might do if it were not for the regulation. When it has been determined that the act is within the police power of the state, nothing further need be said. The rest is to be left to the discretion of the lawmaking power. It is for that power to say whether vaccination shall be had as to all school children who have not been vaccinated all the time, or whether it shall be resorted to only when smallpox is more than ordinarily prevalent and dangerous. Nor does the fourteenth amendment or any other part of the federal constitution interfere with the power of the state to prescribe regulations to promote the health and general welfare of the people.

Defenses for Charging Insanity of Person Not Insane.—The Supreme Court of California says, in the case of Griswold vs. Griswold, an action by a sister against a brother for charging her with being insane and causing her arrest and imprisonment in the insane ward of the county hospital when she was not insane, that it was incumbent on her to prove both want of probable cause and malice, to recover damages. On the other hand, the brother had the right to prove that he acted in good faith, without malice, and on probable cause; that is, on such facts and information as would induce a reasonably prudent man to believe that his sister was insane. It was not necessary that the statement to and advice of the family physician

should have been sufficient to constitute probable cause as a matter of law to make it admissible in evidence. He was supposed to be skilled in his profession, and to know more about the mental condition of the sister than any attorney-at-law could have known. If the brother had not consulted the family physician, but had gone to an attorney-at-law, it would certainly seem that he had much less ground for the prosecution than by pursuing the course he did. He was accused of acting maliciously. Did it not tend to disprove malice if he went to the family physician and fully and fairly stated the facts? It is the policy of the law to encourage prosecutions when there are facts and circumstances that would induce the belief in the mind of a reasonably cautious man of the guilt of the party accused. And so in case a party is insane and dangerous to be at large. It would not do to hold honest parties in heavy damages for an error of judgment. If so, it would be difficult to get responsible parties to make complaints. All that the law requires as a defense to this kind of an action is the existence of such facts and circumstances as would induce the belief in the mind of a reasonably cautious man that the party was insane at the time the charge was made. If such facts and circumstances existed, the plaintiff ought not to recover damages. Again, the court holds that an instruction was clearly erroneous which told the jury that, it being admitted by the brother in his answer that his sister was not insane at the time he had her arrested, the law presumed that in procuring her arrest he acted without probable cause and maliciously, and the burden of proof was on him to show probable cause and want of malice on his part. The court says that the question before the court and jury was not as to the sanity or insanity of the plaintiff at the time of her arrest, but as to whether or not there was probable cause for her arrest, as that term is understood by judges and the legal profession. And the burden is always on the plaintiff to show that the suit or proceeding was instituted without probable cause and maliciously. Moreover, language which might be construed as holding that malice is legally presumed from want of probable cause should be avoided.

Current Medical Literature.

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

New York Medical Journal.

September 3.

1 *How May the Public School Be Helpful in the Prevention of Tuberculosis? S. A. Knopf.
2 A Study of the Vagus Reflex in 380 Individuals: a New Physical and Prognostic Sign in Pulmonary Disease. Thomas J. Mays.
3 Chronic Splenic Anemia; Report and Presentation of a Case. E. F. Conyngham.
4 Pruritus Ani. A. B. Cooke.
5 Constipation as a Habit. Charles B. Forsyth.
6 *Value of Local Treatment, Preparatory to Operation. H. C. Coe.
7 Hypernephroma as a Result of Traumatism. Nephrectomy. Recovery. George Chandler.
8 Case of Anophthalmus. Charles Graef.
9 Resuscitation from Apparent Drowning. Joseph Baum.

1. **The Public School and Tuberculosis.**—In discussing the subject of how may the public school be helpful in the prevention of tuberculosis, Knopf takes up the duties of the school board with reference to choosing a site for a school and the construction of the school; the duties of the superintendent of a public school in arranging the curriculum so as not to overtax the brain and the nervous system of the children; the duties of the school teacher in carrying out the ideas of the superintendent, and those of the school physician in relation to the prevention of tuberculosis. He has compiled a set of rules, a copy of which is given to every child, who is urged to read them, to take them home, and to show them to their parents:

Do not spit, except in a spittoon or a piece of cloth or a handkerchief used for that purpose alone. On your return home have the cloth burned by your mother, or the handkerchief put in water until ready for the wash.
Never spit on a slate, floor, sidewalk, or playground.
Do not put pins in your mouth.
Do not put your fingers into your mouth.
Do not pick your nose or wipe it on your hand or sleeve.
Do not wet your fingers in your mouth when turning the leaves of books.
Do not put pencils into your mouth or wet them with your lips.
Do not hold money in your mouth.
Do not put anything into your mouth, except food and drink.
Do not swap apple cores, candy, chewing-gum, half-eaten food, whistles, bean blowers, or anything that is put in the mouth.
Peel or wash your fruit before eating it.
Never cough or sneeze in a person's face. Turn your face to one side, and hold your hand or handkerchief before your mouth.
Keep your face and hands and finger nails clean; wash your hands with soap and water before each meal.
When you don't feel well, have cut yourself, or have been hurt by others, do not be afraid to report to the teacher.

A systematic examination of school children, and the supervision of the sanitary condition of the school buildings, are two things that should receive the most careful attention from the school physician. Public school sanatoria for the treatment of tuberculous and scrofulous children are an urgent necessity. They will serve as places for the cure of tuberculous children, many of whom, without this, will ultimately develop the more severe type of the disease, and will become burdens either to their parents or to the community at large.

6.—See abstract in THE JOURNAL, xlii, p. 1585.

American Medicine, Philadelphia.

September 3.

10 *Meteorologic Conditions in the Causation of Lobar Pneumonia. J. M. Anders.
11 Latent Malaria, as Seen in the Mountains. Lawrence F. Holmes.
12 On the Significance of Heart Murmur. James S. McLester
13 Thoracic Empyema. W. R. Jackson.
14 Hypertrophy of the Lingual Tonsil. J. J. Richardson.
15 The Antiblennorrhagic Drugs in Gonorrheal Urethritis: the Question of Their Value. A. Nelken.
16 Who Is Your Physician? H. Winnett Orr.

10. **Meteorologic Conditions and Pneumonia.**—Anders has made an extensive study of the relation of meteorologic phenomena to pneumonia and concludes that the seasons exert a marked effect on the prevalence of lobar pneumonia, the maximal mortality being observed during the winter and spring months. That insular climates probably manifest the greatest rise in pneumonia mortality in winter, while that of continental climates coincides mainly with spring. That the mortality of the epidemic form of the disease is, to a less extent, influenced by the seasons, and may occur in the third or fourth quarter of the year. That an apparently close relationship exists between periods of low temperature and the death rate from pneumonia. That the mortality rises and falls with the barometric pressure, the maximal level being reached during periods of highest pressure and vice versa; that the barometric pressure, however, is governed by the temperature, being inversely as the latter, is to be recollected. That the average velocity of the winds and the death rate from this disease would appear to stand to one another in the relation of cause and effect. That the coincidence of existing low temperatures, high barometric pressure, the direction and velocity of the winds and maximum mortality from pneumonia, is so uniformly constant as to merit serious consideration and suggest a close and direct relation between their combined influence and the progress of mortality from pneumonia. That the mean relative humidity of the atmosphere shows equally decided variability during the periods of abeyance in the prevalence and fatality of the disease with that of the cold or annual pneumonia season. That the major influence exerted by the seasons, however, is probably not direct, but indirect, namely, by bringing about that effective element in the causation, concentration, and increased virulence of the specific poison in consequence of closed doors and windows and lack of free ventilation.

Medical News, New York.

September 3.

17 Comparative Progress of Medicine and Law. W. W. Goodrich.
18 High-frequency Currents; Their Physiological Action and Methods of Application. A. D. Mabie.
19 Arthritis Deformans and Its Treatment. Louis Kolipinski.
20 Paratyphoid; a Case of the Hemorrhagic Variety. T. H. Evans.
21 *Intestinal Obstruction Following Appendicitis Operations. Report of 86 Cases. Clarence A. McWilliams.
22 Case of Ludwig's Angina. C. M. Harris.
23 *Endermol, a New Vehicle for Ointments. Virgil Coblentz.
24 Simple and Accurate Method for Estimation of Sugar in the Urine. Harvey G. Beck.
25 Present-day Treatment of Tuberculosis. J. W. Kime.

21. **Intestinal Obstruction Following Appendectomy.**—McWilliams summarizes his paper as follows:

1. The rarity of intestinal obstruction in comparison with the innumerable operations for appendicitis is noteworthy.
2. Obstruction may follow an attack of appendicitis which has not undergone operation. Nine such cases occurred in this series of 86 cases, or 10 per cent.
3. Obstruction may follow the "interval" operation. Eight cases, or 9 per cent., belong to this category.
4. Obstruction is most apt to follow appendicitis with abscess formation. Sixty-nine, or 81 per cent., were of this class. Hence the necessity for early operation.
5. Mechanical obstruction may come on within a short time after the appendicitis operation, when the differential diagnosis from that due to peritonitis may present great difficulties. When in doubt, operate, for many patients have undoubtedly died, unoperated on, with an unrecognized mechanical obstruction (with or without peritonitis) where the erroneous diagnosis was made of simple, uncomplicated peritonitis.
6. Obstruction may occur years after the original attack, or operation (e. g., 10 cases occurred in the second year), when it may come on suddenly in perfect health, or preceded by a period with symptoms denoting "partial" (chronic) occlusion, the right interpretation of which symptoms, from a prophylactic standpoint, is of the greatest importance.
7. There may be several attacks of true, mechanical obstruction. In the above series of 86 cases, several attacks occurred in 5, or 8 per cent., of the 57 patients who survived the first operation for obstruction.
8. Of the 86 patients, 57, or 66.3 per cent., recovered after operations for obstructions. Twenty-nine patients, or 33.7 per cent., died.
9. The small intestine was occluded in all of the 50 cases where it was noted.
10. The cause of the obstruction was given in 53 cases as follows: Constrictions by bands in 28 patients; volvuli in 10; kinkings, or angulations, in 11, and internal hernias in 4 cases.
11. Gangrenous bowel was encountered in 5 cases, necessitating resection, resulting in three recoveries and two deaths.
12. We may expect a much smaller death rate in the future, due to the earlier recognition of the symptoms and their more prompt relief by operation. Fecal vomiting should not be waited for.
13. Prophylaxis consists in operating on appendicitis before the formation of pus, the use of as little drainage as possible, and the least possible amount of handling of the intestines, at the time of operation.
14. Vigorous abdominal massage with elevation of the hips may avert an impending obstruction. Frequent change in patient's position is likewise recommended.
15. Since the exciting cause is in many cases an attack of acute indigestion, patients should have their diet carefully regulated for from four to six weeks after an attack of appendicitis or after an operation.

23. **Endermol an Ointment Base.**—This is a combination of stearic acid amide and paraffin hydrocarbons forming an almost white mass of about the consistency of lard, inodorous, of neutral reaction, and fusing at 78 to 80 C. Coblentz says that when exposed to the air and sunlight under adverse conditions, samples of endermol retained their color, consistency and blandness. When applied to the skin by inunction, endermol forms a smooth, soft, unctuous mass, which is readily absorbed. Applications of endermol ointments of iodin and also aconite were followed by the excretion of iodin in the urine after about five hours in the former, and the characteristic dryness of the throat in the latter. There is absolute freedom from any tendency toward rancidity, although as much as 15 per cent. of water may be incorporated. It is pliable, smooth and free from all irritating properties.

Boston Medical and Surgical Journal.

September 1.

26 *Clinical Topography of Lymph Nodes. F. J. Cotton.
27 Surgery on Old Men. Wm. H. Arthur.
28 *Mental Defectives. Bertha C. Downing.
29 Operations on the Stomach, with Report of Cases. (Concluded.) John C. Munro.

26. **Clinical Topography of Lymph Nodes.**—Cotton calls attention to the fact that the lymph nodes are frequent sources of infection, and that we neglect such aid in locating the primary foci as may be obtained by applying our knowledge of the topography of lymph channels. We need to know more of the practical anatomy of the lymphatics. Such knowledge will insure the identification and proper treatment of local foci of infection that might otherwise be overlooked and also assist us in understanding the glandular conditions. More exact attention to and some familiarity with the grouping of glands and their drainage areas will set us right in regard to: 1. Many so-called "scrofulous" neck-glands in children, which show up first in the posterior deep and superficial glands. Sometimes they are tuberculous; in nearly all cases, however, they are septic; in all cases they are traceable to primary scalp irritation, usually from pediculi. Remove the pediculi make small incisions for the pus, and the great majority will get well promptly without the enucleation now so frequently carried out for these as well as the really tuberculous cases. 2. Buboes of unknown origin, non-venereal, lying low in the groin, due to a septic focus on the foot or leg, which is often overlooked by patient and physician. 3. True inguinal buboes, associated wth gonorrhea, but almost never due to it, but secondary to some septic process under the prepuce which should be, but rarely is, found. The writer cites 67 cases in confirmation of his theory.

28. **Mental Defectives.**—Downing makes an earnest plea for the examination of every school child by a competent commission, under state supervision, and if found to be mentally defective should at once become a ward of the state for proper training and care. The fact that feeble-mindedness often is inherited, supplies a solid foundation on which to base restrictive and preventive measures. Downing examined 3,000 entrance blanks and found tuberculosis to be the chief factor in the generation of idiocy. The exanthematous diseases furnish a rather high percentage of causation of feeble-mindedness. Consumption is a more common hereditary cause than are epilepsy and insanity.

Medical Record, New York.

September 3.

30 *Arteriosclerosis of the Spinal Cord. Joseph Collins and Edwin G. Zabriskie.
31 *Treatment of Tuberculosis of the Larynx and of the Prostate Gland by the X-ray, High-frequency Currents and the Cooper-Hewitt Light. Sinclair Tousey.
32 Internal Urethrotomy in the Treatment of Stricture of the Membranous Urethra. Charles C. Miller.
33 Alcoholism and Insanity; an Etiological Study. T. D. Crothers.
34 Minus Cylinders. F. W. Higgins.
35 Gastrostomy for Stoppage at the Cardia. H. W. Lincoln.
36 Stomach Reflex and Percussion of the Stomach. Albert Abrams.

30. **Arteriosclerosis of the Spinal Cord.**—The authors describe a case which they believe is typical of arteriosclerosis of the spinal cord, a condition which, though much less common than cerebral arteriosclerosis, yet is worthy of careful study. The patient, a fireman, 51 years old, complained of the following symptoms in the order of their development: (1) Weakness and easily induced fatigue of the legs; (2) peculiar sensations in the lower extremities, described as "jerky," "numbness," "heavy" and occasionally sharp pain. (3) Progressive incontinence of urine; (4) progressive paraplegia. Aside from the fact that the tendon jerks were absent and that the Babinski phenomenon was present, the objective symptoms were those usually found in chronic transverse lesions of the cord, namely, slight disorder of sensibility, paraplegia, and trophic manifestations. The cause of death apparently was cardiac weakness. An autopsy was permitted, and the brain and cord were removed. The naked-eye appearance of both was normal. In dividing the cord into different segments several areas in the lower dorsal segments were seen to contain small hemorrhages in the posterior horns on the right side and a similar condition in the left anterior horn. Microscopically, the arteries and veins everywhere throughout the cord and brain were sclerotic. Spinal arteriosclerosis is a condition that permits of being diagnosticated with considerable readiness, especially if there are symptoms, subjective or objective, pointing to generalized arterial sclerosis.

31. **The X-Ray in Tuberculosis.**—Tousey is of the opinion that judicious application of the *x*-ray or of the ultra-violet ray and high-frequency currents is indicated in every case of tuberculosis, especially tuberculosis of the larynx. One case in point is reported in which the treatment was remarkably successful. The expectoration ceased inside of three weeks, there was great improvement in the voice, marked gain in strength, normal temperature, and a gain in body weight of about two pounds. The local condition also has improved; an area of infiltration has diminished, the abrasions have healed, with a whitish appearance which may be due to cicatricial tissue. The treatment consisted, first, in exposure to the *x*-ray once every four or five days; exposure to the Cooper-Hewitt light and application of high-frequency currents once in each interval between the *x*-ray applications. In applying the

x-ray he used an eight-inch Wappler coil, run by the street current (110 volts direct current), using a liquid interrupter. This consists of a beaker of tough porcelain with three or four pinholes near the bottom; this is set in a large jar full of dilute sulphuric acid, and a lead plate connected with one wire dips into the acid outside, while a lead ring from the other wire dips into the acid outside of the beaker. When the current is turned on electrolysis takes place in the dilute acid through which the current has to pass, and the resulting bubbles of hydrogen and oxygen gas block up the pinholes and interrupt the current. The current ceasing, the bubbles of gas escape and the current recommences. A special application was made to the larynx by means of a specially constructed *x*-ray tube. The tube is held close to the outside of the larynx, and directs the rays through the exact tissue we wish to influence, and requires no shield of any kind. In the treatment of tuberculosis of the prostate and bladder, the author allowed the light from an ordinary *x*-ray tube to shine obliquely downward through the lower portion of the abdomen and also, occasionally, through the perineum. Each application lasts about five minutes. Alternating with this perineal application, a special *x*-ray tube was introduced into the rectum. The other portion of the treatment consists in the application of high-frequency currents over the lower portion of the abdomen; and in the rectum on occasions when the intra-rectal *x*-ray tube is not used. For the intra-rectal applications of high-frequency currents a special vacuum electrode is employed in which the tube is insulated except for its distal two or three inches by a separate external cylinder of glass. In this way all the effect reaches the interior of the rectum. The application lasts five minutes. His results have been excellent.

Cincinnati Lancet Clinic.

September 3.

37 The proper Attitude of the Medical Profession, as Such, to Existing Political Parties. Henry Beates, Jr.
38 Nephritis: Water—Diet—Drugs. Irvin Lindenberger.

American Journal of the Medical Sciences, Philadelphia.

September.

39 Aphasia and the Cerebral Zone of Speech. Charles K. Mills.
40 Traumatic Hemorrhage Over the Third Anterior Frontal Convolution; Operation; Recovery. Present Status of Brain Surgery. William C. Krauss.
41 The Adams-Stokes Symptom-Complex, with Report of a Case. Clarence Quinan.
42 *Borated Food as the Cause of Lesions of the Kidney. Charles Harrington.
43 *Inhalation of Gasolene Vapors. Torald Sollmann.
44 Case of Suture of the Heart, with Recovery. Francis T. Stewart.
45 Treatment of Penetrating Wounds of the Heart. John H. Gibbon.
46 *Medical and Surgical Considerations in Pyopericarditis, with Reports of Cases. J. A. Scott and Robert G. LeConte.
47 Pericarditis; Its Symptoms and Diagnosis. Davis Riesman.
48 Two Cases of Paracentesis of the Pericardium. John B. Roberts.
49 *Cancer of the Pancreas and Glycosuria. Richard M. Pearce.
50 Ascarides in the Bile Ducts Simulating Gallstone Seizures. A. M. Pond.
51 *Acute Primary Cholecystitis, with Report of Four Cases. John G. Sheldon.
52 Varieties of Splenic Anemia. Alfred Stengel.

42. **Borated Food and Nephritis.**—Harrington says that the two most commonly employed chemical preservatives of food are borax and boric acid. They are used so extensively that persons of all ages are likely to receive frequent, if not daily, doses of one or of the other or of both. They are added to milk, butter, oleomargarin, some forms of cheese; they are almost always present in opened clams and oysters; they are applied externally to fresh meats to prevent sliminess and to freshen salted fish. They are important constituents of the brine in which meats are pickled and corned. Their solutions are injected into ham and other pork products, and they are found in almost every known make of sausages, to prevent the sausage contents from contracting and thus causing the casing to appear loose and wrinkled. Moreover, they preserve the natural color. Once established in the tissues borax can not be soaked out, not even boiled out. The author points out that many cases of slight kidney disturbance may be due to the continued ingestion of the boron compound. Experiments have been performed from time to time with a view to establishing the relationship between these food preservatives and kidney lesions. Unfortunately, most of these experiments extended over too short a period of time to lend any weight to the results obtained. Harrington submits the details and results of a feeding experiment which he conducted for a period of nineteen weeks. Twelve healthy male cats were selected and kept under precisely the same conditions in separate cages. All were fed on the same food with this difference: One received no preservative; six received borax from 48 to 112 grams in daily doses extending over a period of from 56 to 133 days. The average minimum dose was .544, the average maximum dose .857; the remaining five cats received another preservative which proved to be innocuous. Of the dozen animals under observation but three showed any sign of illness and they were of the borax group. One died at the end of the sixth week; the other two were sick occasionally, but during the last weeks of the experiment appeared to be normally active. Each cat was weighed at the end of each week; all showed occasional losses, but with the exception of the one that died there was a net gain ranging from 230 to 990 grams. When the animals were killed a careful autopsy was made and all the tissues were examined microscopically. The control animal showed no lesions whatever. The animals that were fed on borated food all showed kidney lesions and changes in the liver. The five cats that were given another preservative showed no marked changes in the kidneys or elsewhere. The kidney lesions of the cats fed on borated food were of the same general character, but differing in intensity. They consisted in degeneration of the tubular epithelium, most marked in the convoluted tubes. The normal fat vacuolation was greatly increased and there was focal swelling and disintegration of epithelial cells, with fragmentation of nuclei. The lumen of many of the collecting tubes contained irregular granular masses representing cell fragments. Some tubules were completely stripped of epithelium. In one kidney the change was confined entirely to degeneration of an intense character, with hyaline casts in the small tubes. In other cases the degeneration was not so intense, but was accompanied by foci of cellular infiltration, most marked at the cortex, and also around single glomeruli. Where this was most intense the tubules were entirely destroyed. The lesions were analogous to those found in subacute and chronic nephritis in man, although they do not conform to any type.

43. **Inhalation of Gasoline Vapors.**—Some years ago Sollmann began an investigation of the effects of gasoline vapors with a view to finding a cheap anesthetic for laboratory work. The results were not practical, hence their publication was delayed. The renewed interest in the subject aroused by the employment of petroleum ether in Schleich's inhalation mixture is the reason for publishing at this time a brief summary of his work. In most of his experiments he employed commercial gasoline and in the others he used a pure sample of petroleum ether. The effects were identical. The experiments were confined to dogs and frogs, and the following mixtures were used: Pure gasoline; gasoline 1 to alcohol 8; gasoline 1 to alcohol 5; gasoline 1 to alcohol 3; pure gasoline preceded by an injection of half a dose of morphin. He summarizes his results as follows: Gasoline (or petroleum ether) when inhaled has a comparatively slight anesthetic action. However, the anesthesia is very dangerous, since gasoline also causes convulsions, weakening of the heart, vasomotor depression, paralysis of respiration and irritation of the kidneys. The effects are produced very promptly, but recovery under artificial respiration is also prompt.

46. **Pyopericarditis.**—The medical aspects of pyopericarditis are described in detail by Scott, who also reports four cases. LeConte presents the surgical side, and the authors summarize their paper as follows: 1. Purulent pericarditis is quite frequently overlooked in lobar pneumonia and in other pyemic states. 2. Its presence modifies pre-existing disease to a considerable extent. 3. In diseases with high temperature the presence of purulent pericarditis depresses the fever range and increases the respiratory and pulse rate without sufficient clinical evidence of trouble elsewhere than in the pericardium. 4. It is yet to be proved that the heart, in case effusion is

present in the pericardium, is always dislocated backward and upward. It is probable that in some cases the presence of fluid in the pericardium dislocates the heart either to the right or to the left. 5. The diagnosis once made, the only treatment should be incision and thorough drainage (paracentesis will at times relieve temporary urgent symptoms and should be performed without the slightest fear). 6. That exploratory puncture can be made with safety and is essential for diagnostic purposes before operation is undertaken. 7. That such puncture should be made in the fourth or fifth left intercostal space, as close to the sternum as possible, with a fine needle. 8. That pericardial dilatation does not alter the relations of the pleurae to the anterior thoracic wall. 9. In the presence of pyopericarditis the overlying pleural space is usually obliterated by extension of the inflammation. 10. That incision under local anesthesia is the preferable operation in the majority of cases. 11. That Roberts' condroplastic flap is preferable to an ordinary excision of costal cartilages when incision fails to give adequate drainage.

49. **Cancer of the Pancreas and Glycosuria.**—Pearce studied the pathologic histology of the islands of Langerhans with a view to ascertaining, if possible, what relation these structures may have to the glycosuria seen occasionally in connection with cancer of the pancreas. That some of these changes, such as hyaline degeneration, chronic interacinar pancreatitis involving the islands, etc., might result from the involvement of the organ by cancer, is known to be true; on the other hand, however, there is no adequate explanation of those cases in which, though the pancreas is extensively or completely replaced by the new growth, diabetes does not exist. Pearce made a careful histologic study of 30 cases of cancer of the pancreas, in 3 of which glycosuria was present. The cancers are classified as follows: Primary in the head of the pancreas, 9; in other portions of the organ, 4; secondary to gall bladder or ducts, 5; to stomach, 8; to breast, 1, and to uterus, 1. Glycosuria occurred in 3 cases, in 2 of which the cancer was primary in the head of the pancreas; concerning the third, no data were available. The changes in the immediate neighborhood of the new growth were the persistence and increase in size of the islands, which remained unaltered in the midst of newly formed connective tissue and occasionally were even enclosed by a mass of tumor cells. The changes at a distance from the tumor apparently are dependent on the location and size of the tumor. Small tumors of any portion of the pancreas are unaccompanied by changes in the islands of the normal portion of the gland; on the other hand, if the new growth is large, definite hypertrophy of the islands is apparent. Only two cases of profuse involvement of the gland occurred; in neither was glycosuria present. As a result of his examinations, Pearce believes that there is a definite basis for ascribing a certain portion of the cases of diabetes to lesions of the pancreas, and ultimately to lesions of the islands of Langerhans. He believes, further, that we can include the permanent diabetes of cancer of the pancreas in this group, but that more extended observation must be made before the intermittent glycosuria can be attributed to destruction of large numbers of islands. The absence of diabetes in cases of extensive involvement of the pancreas would appear to be due to the survival of small fragments of pancreas, including a number of islands sufficient to carry on their peculiar function. The persistence of the islands under the adverse conditions described supports the observations heretofore made concerning their anatomic independence, while their enlargement, suggesting as it does a compensatory hypertrophy, is corroborative of the theory that they have an independent special function.

51. **Acute Primary Cholecystitis.**—Sheldon emphasizes the fact that acute primary cholecystitis does occur, that it can be diagnosticated, and that in most cases it can be treated successfully. All acute cases should be operated on as soon as the diagnosis is made. If the patient refuses surgical aid, the stomach should be washed out, rectal feeding resorted to, morphin given if necessary, and cathartics avoided. Cholecystostomy meets the indication in the early stages, and is not so severe on the patient as is cholecystectomy. He advises removal of the gall bladder only in cases with extensive gangrene, and drainage of the gall bladder in all other acute cases. The presence of stones does not modify the treatment. In acute infected cases cholecystostomy has a smaller mortality than has cholecystectomy. Secondary operations may occasionally be required, but this is not especially objectionable, inasmuch as secondary operations on the gall bladder usually are safe and are not complicated with acute infection.

American Journal of Obstetrics, New York.

August.

53 Anatomy, Pathology and Development of the Hymen. George Gellhorn.
54 Two Cases of Ectopic Pregnancy Going to Term. Operation Recovery. J. G. Van Marter and E. R. Corson.
55 The Streptococcus in Gynecologic Surgery. Hunter Robb and W. H. Smith.
56 *The Results of Suspensio Uteri (Kelly's Operation) in Washington, D. C. I. S. Stone.
57 Hemorrhage Before, During and After Labor. Julius Rosenberg.
58 Relative Indications for Cesarean Section, with Report of a Case. Charles D. Lockwood.
59 Abscess of the Liver and of the Lung After Appendicitis. J. Thomas Kelly, Jr.
60 Paradoxical Measles. Adolph Rupp.
61 *Ligaments of the Uterus and Their Functions. James N. West.
62 The Perineum and Perineal Body. Churchill Carmalt.
63 Atmospheric Pressure as a Support to the Uterus. Sumner Shailer.

56. **"Suspensio Uteri."**—A strong point in favor of ventrosuspension, says Stone, is that it generally succeeds in holding the uterus in position, and its new position does not interfere with the progress of labor. All of the "difficulties" are due to "fixation," and while the operation may not be intended for this purpose, a certain number result in firm adhesion of the uterus to the abdominal wall instead of the formation of a suspensory ligament. He considers this operation among the useful and important methods of treating retrodisplacements, although he is limiting its application to carefully selected cases. One should not rely on suspension for prolapse, even when added to plastic operations on the pelvic floor, but rather on fixation instead. Inquiry shows that suspension of the uterus is comparatively free from danger to the parturient woman, and that the operation is the chief reliance of local physicians and surgeons for the surgical treatment of retrodisplacements. However, correspondence reveals the fact that a large number, perhaps the majority, of physicians in general family practice do not advise their patients to have this or any other operation performed for displacements.

61. **Ligaments of the Uterus.**—West says that it would never occur to anyone that the stability of a modern skyscraper is due to any single factor, as the stone, the mortar, the framework or any one element of strength, but rather to the happy union of interdependent elements, all cemented and riveted together into one firm and rigid structure. So with the maintenance of the uterus in a normal position, the areolar connective tissue, the ligaments, the pelvic diaphragm composed of fascia and muscle, the perineum, intraabdominal pressure and gravity all unite to maintain the natural position. The broad ligaments, which arise from the upper, outer and posterior parts of the uterus, are composed largely of plain muscle fibers and give support to the ovaries and tubes, blood vessels, nerves and lymphatics and prevent lateral displacement of the uterus, acting as one of the most important agents in sustaining the uterus in its normal plane in the pelvis. The more dense tissue in the base of the ligament and the muscular fibers tend to fix and sustain the cervix in its position, while the thin and more lax areolar tissue in the upper part of the ligament facilitates a backward or forward movement by which the organ may accommodate itself to the full or empty bladder or rectum. The function of the round ligaments, which are continued from the upper, outer and anterior aspect of the uterus beneath the peritoneum of the anterior layer of the broad ligaments and pass out through the inguinal canal, is chiefly that of guys to prevent backward displacement of the uterus and to guide it forward to the normal position after childbirth. Under ordinary circumstances they contribute nothing to the maintenance of the uterus in its normal plane. The uterosacral ligaments, together with the uterovesical fascia, form a chain of muscu-

ligamentous tissue from the pubes to the second and third sacral vertebræ, maintaining the cervix at its proper level and position in the pelvis. During labor, when the pains set in, the round ligaments tend to draw the fundus forward so that the expressive forces shall act more in the pelvic axis, and the uterosacral, uteropubic and bases of the broad ligaments offer a counterforce on the periphery of the cervix to that of the expulsive forces from above and gravity, thus tending to dilate the cervix and aid in the expulsion of the fetus.

Archives of Otology, New York.

August.

64 *Report of a Fatal Case of Brain Abscess of Otitic Origin. Gorham Bacon.
65 *Report of a Fatal Case of Latent Temporo-sphenoidal Abscess of Otitic Origin Followed by Multiple Secondary Cerebral Abscesses. Alice E. Wakefield.
66 Double Cerebellar Abscess. Operations and Recovery. Wells P. Eagleton.
67 Affections of the Facial Nerve in Diseases of the Ear. C. Zimmermann.

64. **Brain Abscess of Otitic Origin.**—Bacon reports a case, the subject dying a few months after operation. The remarkable features of the case were the absence of the usual symptoms found in such cases. There was no history of a chill, nausea, vomiting or vertigo. The pulse was not slow at any time, nor was the temperature below normal. In fact, the diagnosis pointed to an abscess in the temporo-sphenoidal lobe, especially because the patient gave a history of two operations on the mastoid, while for the preceding two months he suffered from severe and persistent headache on the same side, and an ophthalmoscopic examination showed choked disc with hemorrhages in each eye. There was considerable difficulty in draining the abscess cavity. The external opening was large, but there was always a tendency for the pus to burrow, and finally it burst into the later ventricle. Smears or cover-glass preparations from the abscess cavity showed mixed infection—streptococcus, staphylococcus, a diplococcus (possibly streptococcus) and a short thick bacillus.

65. **Latent Temporo-Sphenoidal Abscess.**—The first evidence of any disturbance in the case reported by Wakefield was a slight purulent discharge from the left ear. The patient had had measles, diphtheria and typhoid fever, when two, four and five years of age respectively. About a year before the present illness (at ten years of age) the girl had attacks of headache, dizziness, nausea, vomiting and constipation, and gradually lost flesh and strength. One day she became much overheated while jumping rope, and on the following day she had severe headache, chills and fever, restlessness and a slight cough. Following a very severe attack of right, irregular, lobar pneumonia, there was a profuse purulent discharge coming from the left ear. There was no special pain or tenderness in the mastoid region, but there was violent frontal headache. In spite of operative interference on two different occasions, the patient died. The autopsy showed a large temporal sphenoidal abscess. The history of this case emphasizes the fact that cerebral abscess may develop insiduously and remain quiescent until some acute illness or violent physical exertion renders the latent process manifest. Uncomplicated acute cerebral abscesses may be accompanied throughout by repeated chills, high temperature, and rapid pulse and respiration. Localizing symptoms may be absent, unless the abscess itself or the surrounding encephalitis encroaches on cortical areas whose functions are definitely known. Chronic suppurative otitis media, attended with persistent localized headache and occasional attacks of dizziness, nausea and vomiting, and with progressive loss of flesh and strength should, in the absence of tuberculosis or other malignant disease, suggest the possibility of latent cerebral abscess.

Journal of Advanced Therapeutics, New York.

August.

68 Electricity in the Treatment of Diseases. Charles H. Shepard.
69 The Radiant-light Bath in the Treatment of Neuroses. T. B. Crothers.
70 *High Potential Currents and Currents of High Frequency. Wm. Benham Snow.
71 Vibrations and Nerve Vibrations Without the Medium of Machines, Their Technic and Therapeutic Value in Acute and Chronic Diseases. R. Strensch.

70. **High Potential Currents.**—According to Snow, currents of high potential and moderate frequency, associated with the production of muscular contraction, are the currents best calculated for the treatment of local inflammatory conditions and the influence on general metabolism, while the currents of high potential and great frequency are better suited to the treatment of superficial conditions and localized septic processes.

Therapeutic Gazette, Detroit.

August 15.

72 *The Treatment of Alcoholism in the City Hospital of New York. Joseph Collins.
73 Alcoholism and Its Treatment Among the Insane. H. W. Mitchell.
74 The Treatment of Acute Alcoholism. Fred C. Johnson.
75 The Treatment of the Summer Diarrheas of Children. H. Lowenburg.
76 Tubal Menstruation. E. E. Montgomery.
77 Lead Poisoning from Therapeutic Use of Lead Acetate in Capsule, with Report of Two Cases. D. J. M. Miller.

72. **Treatment of Alcoholism.**—Collins outlines the treatment of alcoholism as pursued in the City Hospital of New York. The cases are divided into three classes: (1) Those with frank delirium tremens; (2) those with such nervous manifestations as tremor, mental agitation, unrest and apprehensiveness, with an insight into their condition; and (3) those who present the mild psychoses characterized particularly by amnesia, slight confusion, psychical and physical inertia. Other kinds of alcoholic disorder or disease, such as Korsakow's symptom complex, multiple neuritis, the so-called alcoholic polyneuritic psychosis and subacute gastroduodenitis, are looked on as individual diseases of manifold causation, excess in alcohol being merely one of the commonest causes. In cases of delirium tremens, treatment is directed toward maintaining the patient's vitality and overcoming the motor unrest and emotional agony, and to secure sleep. Patients of average robustness are given 15 gr. of gray powder, followed in six hours by a saline and copious draught of hot water to facilitate the action of the latter, as well as for its diuretic and diaphoretic effects. Before any medicine or food is given by mouth an attempt should be made to overcome the gastroduodenal congestion which invariably attends these cases. In many instances the mercury with chalk is repeated on the second or third day, and in certain cases where the bowels are in a very sluggish state 3 gr. of powdered jalap are added. Alcoholic stimulants are used rarely in any case of uncomplicated delirium tremens, whatever its gravity. When complicated with pneumonia, whiskey and brandy are given freely if there are cardiac and pulmonary indications that call for stimulation. Proper feeding is one of the most important features of the treatment. Predigested, partially digested, concentrated nourishment administered hot by the stomach or rectum or both, is depended on to maintain the vitality of the average severe case. The second indication in treatment is accomplished by the use of a hot bath, the hot pack, and the hypodermic administration of hyoscin. Nothing pulls the patient's pulse up so quickly and makes him breathe more slowly, quells his delirium and soothes him physically and mentally so much as a brief, very hot bath, from two to five minutes, temperature 110 to 115 F., and especially if the patient is given at the same time a dose of trional or veronal. Similar results are obtained from the hot blanket pack, although this is not as good a vasomotor stimulant as the hot bath. In cases of threatened collapse the hot bath is used. In less severe cases or in individuals whose tissues are free from organic disease, and in febrile cases the wet sheet pack, the water at a temperature of 65 F., the patient being enveloped from one to two hours, is advisable. Over-heating is avoided by withdrawing most of the covering as soon as reaction is well established. When these measures do not suffice hyoscin hydrobromate, in doses of from 1/100 to 1/50 gr., is given hypodermically; if necessary, this dose may be doubled. Morphin and chloral do more harm than good and should not be given. The third indication for treatment is met by giving trional, veronal and paraldehyd. The eliminative organs should be stimulated in every possible way. The treatment of the second class of patients consists of the administration of gray powder, jalap, alkaline diuretic drink, peptonized milk, and an occasional dose of sleep-producing

medicine. The evacuants and proper feeding are valuable. In the third class of cases the most important feature in the treatment in addition to the ordinary treatment of delirium tremens is stimulation. These patients must have stimulation early, and the stimulant par excellence is alcohol. Digitalis is used when the pulse is weak, feeble and rapid, and the delirium undergoes a corresponding change—that is, becomes asthenic in character. Collins believes that sedatives are used too often and too indiscriminately. The greatest care should be taken in the application of mechanical restraint lest the encroachment on respiratory mechanism lead to supplemental complication and jeopardize the life of the patient. There will rarely be any necessity for mechanical restraint in any case of delirium tremens if the indications above outlined are followed.

Richmond Journal of Practice.

July.

78 The Treatment of Prostatic Hypertrophy. Lewis C. Bosher.
79 Wet Dressings. Southgate Leigh.

Physician and Surgeon, Detroit and Ann Arbor.

August.

80 Two Cases of Accessory Pancreas (Omentum and Stomach). Aldred Scott Warthin.
81 Electric Currents in the Treatment of Disease. Arthur F. Fischer.

Kansas City Medical Record.

August.

82 Functional Nervous Disorders. T. C. Bulware.
83 Leukemia. M. P. Overholser.

American Practitioner and News, Louisville, Ky.

August.

84 Case of Abscess of the Brain Following Acute Suppurative Otitis Media, with Remarks. Isaac Lederman.
85 Chronic Gastritis. John J. Moren.

Southern Medicine and Surgery, Chattanooga.

August.

86 Treatment of Prostatic Hypertrophy. Lewis C. Bosher.
87 Medicinal Treatment of Pneumonia. E. G. Wood.
88 Case of Acute Yellow Atrophy of the Liver, Complicating Appendicitis. Lewis C. Bosher.

Western Medical Review, Lincoln.

August.

89 The Diagnosis and Treatment of Early Tabes. H. Douglas Singer.
90 Clinical Laboratory Methods of Diagnosis. H. H. Waite.
91 Pain as a Diagnostic Factor in Cholecystitis and Cholelithiasis. A. F. Jonas.
92 Notes of a Few Surgical Cases. A. B. Anderson.
93 Diagnosis and Treatment of Stricture of the Urethra. A. C. Stokes.

Journal of Medicine and Science, Portland, Maine.

August.

94 A Few Points on Eczema. R. W. Bucknam.
95 Recent Discoveries in Some Medical Specialties. Baron Munchausen.

Alienist and Neurologist, St. Louis.

August.

96 Forensic Aspect of Double Suicide. James G. Kiernan.
97 Outlines of Psychiatry in Clinical Lectures. (To be continued.) C. Wernicke.
98 Quarter and Semi-Decade Treatment and Curability of Epilepsia. C. H. Hughes.
99 Mixoscopic Adolescent Survivals in Art, Literature and Pseudo-Ethics. (To be continued.) James G. Kiernan.
100 Morbid Exhibitionism. C. H. Hughes.
101 A Psychologic Incident in the Court Room. T. D. Crothers.
102 The Erratic Erotic Princess Chimay; A Psychologic Analysis. C. H. Hughes.

Medical Sentinel, Portland, Ore.

August.

103 Address, Washington State Medical Society. F. H. Coe.
104 Laboratory Committee, King County Medical Society. Kenelm Winslow and J. P. Sweeney.

The Laryngoscope, St. Louis.

August.

105 Malignant Growths of the Nose and Nasal Pharynx. Frederic C. Cobb.
106 Malignant Growths of the Mouth and Pharynx. M. A. Goldstein.
107 Primary Malignant Disease of the Larynx. Chevalier Jackson.
108 Brief Discussion of the Pathology of Malignant Growths of the Upper Air Passages. D. Braden Kyle.
109 Paraffin as a Cosmetic Remedy. M. Delmar Ritchie.
110 Four Unusual Tumors in the Nasopharynx. Walter F. Chappell.
111 Pedunculated Bony Tumor of the Nasal Septum. John D. Richards.
112 A Valuable Adjunct (Method of Keeping Spray Solution at Even Temperature. R. S. Gailey.

Pacific Medical Journal, San Francisco.

August.

113 Our Knowledge of the Therapy of Gonorrhea as It Stands To-Day. Louis Gross.
114 Medical Profession: Its Politics and Politicians. B. M. Jackson.

Old Dominion Journal, Richmond, Va.

August.

115 The Treatment of Prostatic Hypertrophy. Lewis C. Bosher.
116 Prevention of Tuberculosis. Henry W. Cook.
117 Some Remarks on the Diagnosis of Typhoid Fever. Green Baughman.

Southern California Practitioner, Los Angeles.

August.

118 Diagnosis and Prognosis of Common Diseases of the Chest. George L. Cole.
119 Reports of Mastoid Cases. H. Bert Ellis.
120 Earache. Frank W. Miller.
121 Eucalyptus Oil: Its Therapeutic Value. Edward G. Binz.
122 The Trained Nurse and the Larger Life. Norman Bridge.
123 Anteroir Uveitis; Its Early Diagnosis and Treatment. Samuel Outwater.
124 Report of Out-Patient Obstetrical Department College of Medicine, University of Southern California. Titian Coffey.

Wisconsin Medical Journal, Milwaukee.

August.

125 Surgical Treatment of Dyspepsia. Roswell Park.
126 Clinical Course and Diagnosis of Arteriosclerosis. Alfred Stengel.
127 Indications for Enterotomy in Some Forms of Intestinal Obstruction, with a Report of Cases. G. F. Shimonek.

Medical Bulletin, Philadelphia.

August.

128 Epilepsy. John V. Shoemaker.
129 Bright's Disease, Renal and Vesical Calculi, and a New Aphrodisiac. John A. Cutter.
130 Tuberculous Pleurisy in the Course of Typhoid Fever. E. Mosny and O. Beufume.

Iowa Medical Journal, Des Moines.

August 15.

131 Pneumonia; Consideration of Its Treatment, Based on the Conception of Its Morbid Changes. Walter L. Bierring.
132 Professional Courtesies. L. W. Littig.
133 Adenoids; Their Diagnosis and Treatment. Harold Bailey.
134 Alopecia Symptomatica Following Scarlet Fever. W. G. Little.

Nashville Journal of Medicine and Surgery.

July.

135 Pseudo-Leukemia. Frank Swope.
136 Report of a Case of Concurrent Ectopic and Uterine Pregnancy. Pruritus Uteri (?), with a Report of a Case. F. J. Runyan.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal, London.

August 27.

1 Discussion on the Control of the Milk Supply.
2 Discussion on Poverty and Public Health.
3 The Teaching of Hygiene in Public Elementary Schools and the Influence on the Public Health of the Infants' Departments of Such Schools. W. Naylor Barlow.
4 School Diphtheria in the Metropolis. C. J. Thomas.
5 *A Plea for Oral Hygiene. K. W. Goadby.
6 *The Segregation of Tuberculous Patients Among Factory Workers. C. W. J. Brasher.

5. Oral Hygiene.—Goadby believes that the far-reaching and widespread effects of the ravages of oral sepsis as a factor in disease are by no means always attributed to their proper cause. Among children, in particular, chronic inflammation of the mouth should be regarded with the utmost suspicion as a mode of hibernation of infectious diseases. Among children we find impaired nutrition, and with it impaired growth; with this, again, badly developed maxillæ, thus completing the vicious circle. Among diseases associated with oral sepsis are the following: 1. Chronic infection of the lymphatic glands of the neck by septic mouth lesions. 2. Anemia and lowering of the resistance of the gastric mucous membrane by the swallowing of staphylococci which are present constantly in suppurating gums. 3. Impaired nutrition due to inefficient mastication owing to carious teeth. The persons who require treatment fall into three classes: 1. Children in schools and children before they reach the school age. 2. Young adults, such as the domestic servant, shop assistants, etc., who, generally, are unable to pay for services. 3. The general mass of the working class population, many of whom can afford small payments. For children under the school age efficient cleansing of

the teeth is all that is required. In order to take care of the teeth of school children properly the author favors the appointment of dental surgeons, whose work should consist of: 1. Periodical inspection once in three months, at least, of the children at the schools. 2. The treatment of dental caries and conditions of oral disease at some central place to which the children could be sent. 3. The superintendence of the periodical cleansing of the mouths of all the younger children by an intelligent assistant, under the supervision of the dental surgeon. For the care of the second and third class Goadby suggests the following: 1. The appointment of dental clinical assistants, at a salary, by the various dental hospitals. 2. That a nominal payment be made by the patients to cover the working expenses. 3. Only the treatment of dental caries and of oral sepsis be allowed. 4. The clinical assistants should be under the jurisdiction of the hospital staff. In this manner oral cleanliness can be given the attention it deserves, and much harm averted.

6. **Tuberculous Factory Workers.**—Brasher describes the method of procedure at a large factory in Bristol having in view the segregation of tuberculous patients. Applicants for work are examined as for life insurance, particular attention being paid to the condition of the lungs and heart. Those having very unhealthy tonsils or suffering from adenoids are required to submit to operation before being admitted to the factory. The superintendents are instructed to report any evidence of failing health in any employe. All girls suffering from phthisis are suspended from work and put on the "sick fund." Until they can be sent to a sanatorium they are treated at home or at the factories, and are instructed as to proper diet, ventilation, rest and other details of the "open-air treatment." Patients who have suffered from phthisis are not encouraged to return to the factories after apparent cure, but rather to seek some outdoor employment, and are assisted as far as possible to obtain such. Patients with tuberculous lymph adenitis or peritonitis are allowed to resume work if cured, but no phthisical patient would be allowed to return to work until repeated examinations of the sputum had given uniformly negative results. The results obtained have been excellent, such as warrant the institution of similar methods in all factories employing much help.

The Lancet, London.

August 27.

7 *The Serum Treatment of Exophthalmic Goiter. George R. Murray.
8 The Radical Cure of Patent Urachus. B. C. Stevens.
9 A Case of Acute Diabetes Insipidus with Fatal Coma. Alfred H. Carter.
10 Meningeal Infection by the Diplococcus Pneumoniæ, Simulating Infective Cerebrospinal Meningitis. W. G. Barras.
11 *Hemorrhagic Smallpox. Charles Fraser.
12 Formaldehyd in Milk. W. Scott Tebb.
13 Two Cases of Poisoning by Mussels—One Fatal. R. Rolfe.
14 A New Pathogenic Bacterium Causing Basal Meningitis in Infants. W. D. Emery.

7. **Serum Treatment of Exophthalmic Goiter.**—Murray prepared an antitoxic serum to be used in the treatment of exophthalmic goiter by injecting rabbits with from five to ten minims of liquor thyroidei daily for a period of about five weeks. After thorough coagulation of the collected blood the serum was decanted into small sterilized glass bottles, 0.2 per cent. carbolic acid was added, and the glass stoppers were sealed with paraffin. Two cases were treated with this serum, the dose varying from 5 to 10 minims, given three times a day. Although the condition of both patients improved considerably, the subjective symptoms being diminished in severity, Murray is inclined to ascribe this improvement to the rest in bed and not to the serum. He believes it quite possible that if larger animals were employed—he used rabbits—and larger doses of thyroid extract given, a serum might be obtained which could be used for hypodermic injection in acute cases, or for administration by the mouth in chronic cases, where prolonged treatment would be required.

11. **Hemorrhagic Smallpox.**—Fraser calls attention to the variation in the number of cases of hemorrhagic smallpox in different epidemics and presents a clinical note of 36 cases. He recognizes three types of hemorrhagic smallpox: 1. Characterized by the appearance during the initial stage of the disease of hemorrhagic changes in the skin and visible mucous membranes, resulting in the production of petechiæ and ecchymoses, the patient almost invariably dying before the characteristic smallpox eruption has had time to declare itself. 2. Cases in which the hemorrhagic element involves not only the region of the pock but areas free from eruption. 3. Cases in which the area of the pock alone is involved. A review of Fraser's report brings out one or two prominent points. In the first place, the unvaccinated person suffering from smallpox appears to be more liable to this type of the disease than the vaccinated. In his cases 3.3 per cent. of unvaccinated persons suffered from the hemorrhagic type, as against 3.1 per cent. of the vaccinated. Only 3 out of his series of 36 cases were under 10 years. Out of a total of 1,200 treated at the Dagenham Hospital during the epidemic of 1902—from which Fraser takes his 36 cases of hemorrhagic smallpox—198 persons were under 10, practically all of them being unvaccinated; 1.5 per cent. of these suffered from the hemorrhagic variety as against 3.3 per cent. of all cases over that age. Men were more frequently affected than women, in the proportion of 20 to 16. Fraser directs attention to an interesting fact, the voraciousness of the patient's appetite and his ability to retain and utilize nourishment. In a few cases gastric derangement with vomiting was prominent, and even in these cases the patients displayed an anxiety for food which they were unable to retain. This seemed to be a characteristic of smallpox patients in general; the increased gravity of the hemorrhagic type did not appear to diminish the desire for nutriment.

Glasgow Medical Journal.

August.

15 *Case of Chronic Lymphatic Leukemia. John W. Findlay.
16 Intraperitoneal Hemorrhage and Hematocele Arising from Tubal Abortion or Rupture, with Records of Illustrative Cases. G. Balfour Marshall.

15. **Chronic Lymphatic Leukemia.**—Findlay reports a case of this kind occurring in a man aged 60 who complained of weakness and breathlessness of sixteen years' duration, and of pallor and of enlargement of the lymphatic glands of two years' duration. There was a well-defined history of syphilis contracted over forty years ago, but until two years ago the symptoms of the present trouble were not very marked, except the weakness and breathlessness. The patient first noticed lumps under his chin, which increased steadily in size for two or three weeks, after which they got smaller until they became little larger than haricot beans. Next the glands on both sides of the neck swelled, then the glands in the left axilla, followed by those in the right. All these glands first became large and then small and hard. Edema of the face and eyelids, feet and legs has existed for about one year. There have never been any fainting fits or attacks of giddiness and palpitation. The dyspnea became so bad as to confine the patient to the house. For several months there was pain and tenderness over the lower half of the sternum. The appetite has been good throughout and gastric and intestinal disturbances have been completely absent. Repeated blood examinations showed a marked falling off in the number of red cells as low as 1,175,000, and a leucocytosis of 152,500. The increase in the white cells was confined solely to the small lymphocytes, which equaled 95 per cent. of the total number. The polymorphonuclear neutrophiles fell to 2.5 per cent. All the other white cells had fallen below the normal percentage. The hemoglobin fell to 25.5 per cent. All the glands are freely movable under the skin; no very large glandular masses were seen; the glands were all soft, though not at all of that softness which suggests fluctuation. The tonsils were not enlarged nor was there any excess of lymphoid tissue about the base of the tongue. Thyroid is normal. Examination of the heart and abdominal organs did not show anything markedly abnormal. The case, beyond a doubt, was one of chronic lymphatic leukemia. A slight improvement in the general condition of the patient followed the use of Fowler's solution, 15 minims per diem; the red corpuscles and hemoglobin percentage have increased slightly, but the leucocytosis has become much worse.

Medical Press and Circular, London.

August 17.

17 The Study of Bionomics in Relation to the Diminishing Birth Rate. W. R. MacDermott.
18 Acetozone: a Note on Its Value as an Antiseptic and Germicide. James Burnet.
19 Case of Suppurative Knee-joint. A. R. Brackett.
20 *Thyroid Grafting in Human Beings. H. Christiani.

20. **Thyroid Grafting.**—Christiani continues his study of homo-thyroid grafting. He made use of three classes of thyroid: 1, normal thyroid substance; 2, slightly altered substance; 3, manifestly altered. The recipient organisms were normal in one case, apparently normal in the second, and distinctly diseased in the third case. By combining these different elements the grafts paved the way to the following eventualities: 1, graft of normal thyroid substance in a normal organism; 2, graft of thyroid tissue manifestly altered in a normal organism; 3, graft of thyroid tissue apparently but slightly altered in an apparently normal organism; 4, graft of normal thyroid tissue in an organism clearly diseased; 5, graft of manifestly diseased thyroid tissue in a manifestly diseased organism, and, 6, graft of slightly changed thyroid tissue in a manifestly diseased organism. Some of these tissues were removed in from six to fifteen months after their implantation and subjected to microscopic examination, from which the author concludes that thyroid grafts are possible in man, and that by this means we can obtain permanent neo-thyroid glands. The results from an anatomic point of view are excellent, provided normal gland be employed. They are positive even when moderately changed gland substance is employed, as in cases of slight goitrous degeneration. They are negative, on the other hand, when an obviously diseased gland is used. Further observation will be required to establish within what limits goitrous tissue may be employed with this object in view. From a clinical point of view it may be concluded that the preventive thyroid graft, that is to say, a graft made in cases where, after too radical extirpation of the organ, the subject is threatened with cachexia strumipriva, may avert the impending manifestations. In idiopathic myxedematous hyperthyroidea grafts are equally apt to develop and persist, provided always that the tissues employed have not undergone too marked changes. Since experiments on animals show that the thyroid organ, when it persists with its normal histologic characters, is perfectly capable of fulfilling the function, there is no obvious reason to question the probability of a similar result when it persists in man. With the object of avoiding the immediate transplantation of the organ from the donor to the recipient, Christiani investigated the preservation of thyroid tissue in various liquids, and, so far as they go, these researches tend to show that this preservation, at any rate in respect to the thyroid of the rat and the rabbit, is possible in artificial serum and in the blood serum of certain animals, but only for a comparatively short period of time (rather under an hour instead of ten seconds in the air). The author is carrying on another set of experiments having in view a simplification of the implantation of the thyroid tissue. Thyroid tissue, reduced into very small fragments by the aid of a sharp knife and with every precaution to avoid crushing, which would destroy its vitality, may be emulsified in the preservative liquid and injected into the selected organism through a trochar or large hollow needle. These experiments, which are still in progress, have not as yet given results sufficiently conclusive to warrant the formation of definite conclusions. Thyroid grafting probably never will take the place of thyroid medication. Not only does the latter method of treatment remain indicated in cases where grafting is impracticable, but it may be required as a preliminary step to grafting in order to prepare the soil in the presence of grave disturbances of nutrition, and, indirectly, to assist in the development of the transplanted thyroid tissue by avoiding the risks inherent to too early and exaggerated functional demands.

Revue de Chirurgie, Paris.

Last indexed page 228.

21 (XXIV, No. 7.) *Evolution anatomique des fractures mobilisées dans le but de provoquer des pseudarthroses. Rôle des muscles dans la consolidation des fractures et dans les pseudarthroses. V. Cornil and P. Coudray.
22 *Des ostéomes de l'intestin. E. Quénu.
23 *De la perforation des ulcères de la petite courbature (perforations hautes, high gastric ulcers). E. Villard and L. Pinatelle (Lyons). (Commenced in No. 5.)
24 (No. 8.) *Du traitement des fractures récentes fermées par l'agrafage métallique (wire fixation of recent, uncomplicated fractures). C. Dujarier.
25 *Bactériologie de l'appendicite. O. Lanz (Amsterdam) and E. Tavel (Berne). (Commenced in No. 7.)
26 *Leucocyte Curve in Surgical Affections. C. Julliard (Geneva).—De la valeur clinique de la courbe leucocytaire dans les maladies chirurgicales et en particulier dans l'appendicite. Etat de la question. (Commenced in No. 5.)

21. **Consolidation of Mobilized Fractures.**—The extensive experimental research described demonstrates that daily displacement of the fractured stumps does not prevent consolidation. It may be retarded and the callus may be unduly large and misshapen, but the consolidation is very firm. The mobilization was much more vigorous than in therapeutic massage and mobilization. When a pseudarthrosis forms it is due more frequently than generally supposed to interposition of a fragment of muscle. In other cases it is due to the *chevauchement* of the fractured bones. A rarefying osteitis may be incriminated in certain cases, and in others a fatty rarefaction of the bone. Syphilis is the only general cause known to date, but certain local causes may co-operate, among them the interposition of a scrap of bone, effusion of blood or suppuration.

22. **Osteomata of the Intestine.**—Quénu had occasion to operate on a patient exhibiting symptoms of constriction of the small intestine. The stricture was caused by patches of bone formation, the only case on record, to his knowledge, of such ossification, neoplasia and consequent stricture formation. He gives eight views of the resected portion of the intestine, and cites the experience of veterinarians with osteomata in the intestines of horses. An osteoma may exist without any other alteration in the intestinal walls. In the case described the first clinical sign of its presence was colic pains, very severe. Colics from this cause may terminate in rupture of the intestine. The osteoma may be associated, probably secondarily, with a vegetating adenoma of the intestinal mucosa and form a tumor entailing obstruction of the gut. The osteoma is also liable to induce ulcerative lesions in the intestinal mucosa (with or without a true neoplasm, according to the interpretation placed on the specimens illustrated), entailing in time a tight, cicatricial stricture of the small intestine.

23. **Perforation of Ulcers in the Lesser Curvature.**—Villard and Pinatelle remark that in the surgical treatment of perforated gastric ulcer too little attention has been paid hitherto to the site of the ulcer as an indication for the mode of intervention. In 2 cases they found it impossible to expose and suture the perforation on account of its location high up on the lesser curvature. They proceeded, therefore, to wall off the perforation by throwing up a barrier below. This was accomplished by suturing the anterior aspect of the stomach at the middle to the anterior wall of the abdomen. This formed two separate pockets. The upper pocket included the perforation and the focus of perigastritis. It was drained. The lower pocket corresponded to the large abdominal cavity. In the 350 cases of perforation of a gastric ulcer on record, 115 are mentioned as being on the lesser curvature or cardia, that is on the upper and less movable part of the stomach. Perforation occurs in only about one-third of these "high" ulcers. This comparative infrequency of perforation is due to the high protected site, its immovability and frequent existence of adhesions. These adhesions limit the peritoneal infection and impress certain characteristics on it, peculiar to the region when it does occur. Clinically, the persistence of vomiting is a constant sign; antecedents of an ulcer are found more frequently, and the symptoms assume a subacute course or recur in successive exacerbations. These clinical findings suggest that it may be better to operate in a preventive sense whenever a patch of perigastritis develops rapidly, accompanied by indications of a reaction on the part of the peritoneum. The intervention should be the walling off of the patch with gauze, supplemented by gastroenterostomy. After perforation has occurred, a laparotomy should be done at once and the per-

foration be sutured, if possible. If not, owing to peripheral adhesions or friability of the edges of the perforation, the intervention may have to be restricted to walling off the perforation. The protecting adhesions should always be respected. In case of extreme friability or extent of the lesion, sutures may be applied at a distance or the perforation may be sutured to the skin or to the omentum, or all three methods may be combined, walling off the site with gauze. The bibliography to the end of 1902 is reviewed.

24. **Clamp Fixation of Recent, Uncomplicated Fractures.**—Dujarier describes 4 cases with a number of illustrations, in which the usual measures for treatment of a recent fracture proved ineffectual. Radioscopy showed malposition of the parts, and there was pain and ulceration was feared. Under these circumstances an incision was made down to the bone and a couple of two metal clamps, like double-headed tacks, were driven into the shaft of the bone to hold the stumps in place after reduction. The holes were drilled for the clamp to the exact size and depth of the legs of the clamp, and it was driven into place with light blows on the alternate legs, using a light steel hammer with a tapering head and a nail-set to insure that the blows fell axial to the points of the clamp and without danger of injury to the soft parts. The results in the 4 cases showed that when the clamps are driven in a bone covered with thick soft parts, such as the radius or femur, they remain solidly implanted with no tendency to work loose. In a superficial bone they are exposed to this tendency. In one of his patients the fracture of the tibia consolidated in less than a month, but the patient returned after a certain time

with signs of fistula formation over the callus. The clamps were removed without anesthesia and there has been no disturbance since. A second patient complained of slight discomfort at the point where the tibia had been fractured and the clamps applied. They were removed as a prophylactic measure, fearing that they might work loose later. They were found so solidly implanted, however, that some injury was done to the bone in removing them. No attempt should be made to remove them until they give signs of being loose. In other cases they healed perfectly in place and insured ideal consolidation of the femur and radius, with perfect functional results, after failure of the ordinary measures. The indications for their application may be deduced from the results observed in these 4 cases. The age, general health, occupation, etc., should be considered in determining the indications for the use of the clamps or agrafes, as the French call them. The latest approved model is shown herewith. The side toward the bone is flat and the clamp is made extra thick at the bend to straighten this, the weakest point.

25. **Bacteriology of Appendicitis.**—Lanz and Tavel's communication is based on the bacteriologic study and clinical description of 130 cases of appendicitis. Their findings indicate that the normal appendix presents the same microbian flora as the large intestine. In case of inflammation leucocytes are attracted to the spot, with active phagocytosis, with the result that the pathologic appendix was found sterile in 10 per cent. of the cases (mostly examined *à froid*), while the normal appendix was never found sterile.

26. **Leucocyte Curve in Surgical Affections.**—Julliard concludes his comprehensive study of this subject and its literature with the statement that the leucocyte curve is a valuable diagnostic aid in appendicitis, peritonitis, and all affections in which there is suppuration not accessible to exploration. It is destined to increase in importance in comparison with the ordinary diagnostic measures consecrated by long experience but which sometimes prove indecisive. It is certainly as valuable a sign as the temperature, if not more so. In many instances in which the temperature was indecisive the leucocyte curve supplied the missing information. The few cases which give paradoxical findings according to our present knowledge may possibly be explained some day, and they should not induce us to disregard such a precious symptomatic element as the leucocyte curve. It should be determined in every case of appendicitis in which the surgeon is not absolutely sure whether the case is tending toward aggravation or improvement of the infectious process. In such dubious cases the leucocyte curve may prove extremely valuable, both for the diagnosis, prognosis and treatment. In non-suppurative appendicitis the leucocyte curve approximates the normal (9,000) or ranges between normal and the lower limit of suppuration, that is, between 10,000 and 25,000. There may be considerable rise at first, but it is briefly transient. Suppuration sends the curve above 25,000 for two or three days, and purulent peritonitis causes it to remain high unless the resisting powers are enfeebled. When the leucocyte curve remains above 25,000 it indicates suppuration, and this testimony should be given the predominance over that of other, possibly conflicting symptoms. The leucocyte curve enables a suppurative appendicitis to be differentiated from typhoid fever, from a non-inflammatory tumor of the cecum or fecal stasis therein. In the first case it is high; in the others it persists normal. The absence of a high leucocyte curve, however, does not preclude the existence of suppuration, as, in exceptional cases, there may be suppuration without hyperleucocytosis. Julliard reviews the leucocyte findings in a number of other surgical affections. Perirenal abscesses cause a leucocytosis of 12,000 to 25,000, and may thus be differentiated from a cold abscess or tuberculous process. Abscesses in the liver send the leucocyte curve higher than any other purulent collection in the organism. The leucocytes may number 45,000 to 90,000. In peritonitis a leucocytosis over 25,000 for two or three days is presumptive evidence of pus formation. In septicemia the general infection sends the leucocytes up to 37,000 or even 57,800 in some cases, and the curve is a valuable means of information in regard to the evolution of the infectious process and the resistance offered by the organism. One case of septic meningitis has been reported in which the leucocytes numbered 20,000, while in a tuberculous meningitis they numbered merely 6,000 to 8,000, although the temperature was high. Abscesses at the periphery cause much less leucocytosis than deep-seated abscess formation. In erysipelas the leucocyte findings are frequently absolutely opposite to the temperature findings. The leucocytosis increases with the progress of the affection. Wassermann observed one case in which the leucocytes increased from 9,600 to 30,500 without any rise in temperature, although terminating fatally. The leucocyte findings seem to be contradictory in case of malignant disease, although extensive ulceration is generally accompanied by an increase. Another point generally admitted is that the leucocyte curve rises when there is generalization of a primary neoplasm. When the metastasis occurs in the bone marrow, myelocytes are usually encountered in the blood. In case of ulcer and cancer of the stomach the leucocytosis of digestion may afford diagnostic information. In case of cancer there is no leucocytosis of digestion, while it can be noticed in case of round ulcer. The leucocytosis of digestion should always be examined before surgical intervention on the stomach, in order to determine the condition of the mucosa and the possibility of its functioning. Hence the normal condition of the blood in case of a duly diagnosed cancer of the stomach may impel to early intervention. There does not seem to be any parallel between the leucocytosis and the temperature. They are not symptoms which can be substituted one for the other, but, on the contrary, they complete and throw light on each other. Their nature and final causes are not necessarily identical. The leucocyte curve varies more sensitively than the temperature curve. The fluctuations of the morbid process are frequently reflected in the leucocyte curve long before they are manifest in the temperature.

Münchener medicinische Wochenschrift.

27 (LI, No. 31.) *Cause of Colic. Wilms.—Die Ursache der Kolikschmerzen bei Darmleiden Gallensteinen und Nierensteinen.

28 *Studien über die Temperatur erkrankter und hyperämisierter Gelenke (joints). R. Kothe.
29 *Action of Radium on Animal Tissue. H. Heineke.—Zur Kenntnis der Wirkung der Radiumstrahlen auf tierische Gewebe.
30 Zur Kasuistik der Meningocele sacralis anterior. W. Nieberding.
31 *Ein Riesen-Ovarial-Cystoma. P. Zacharias.
32 *"Steeple Skull" and Optic Atrophy. K. Velhagen.—Ueber Turmschädel und Sehnervenatrophie.
33 Tip of Whiplash Imbedded in Eye. Nöldeke.—Eine ungewöhnliche Fremdkörperverletzung des Auges.
34 Cutting Forceps for Nose. Voss (Passow's clinic, Berlin.)—Eine neue schneidende Zange für die Nase.
35 Mouth Lamp Spatula with Mirror. H. Kricheldorf (Freiburg.—Mundbeleuchtungspatel mit ansetzbarem Mundspiegel.
36 *History of Medicine and Hippocrates. M. Roth.—Geschichte der Medizin und H.

27. **Cause of Colic.**—Wilms ascribes the pains to the pulling and stretching of the distended biliary passages at their points of fixation. This pulls on the sensory nerves there, and is the cause of gallstone colic pains. When the gall bladder is normal it is more flexible and is able to pull harder than when it has become hard and thick. This causes more violent pains, and it may be accepted as an axiom that the nearer to normal the condition of the gall-bladder walls, the severer the colic. Intestinal colic is due to the same cause, traction on the sustaining mesentery. The contraction of the intestinal wall tends to straighten out the gut, and the resistance to this straightening out offered by the mesentery is the cause of the colic in this case. The conditions are similar in renal colic. Occlusion of the ureter causes stagnation of urine with dilatation of the pelvis of the kidney and consequent pulling and stretching of the capsule. There do not seem to be any sensory nerves in the mucosa of the ureter.

28. **Temperature of Diseased Joints.**—Kothe has devised a means of taking the temperature over large areas of the body. It shows that when there is a disturbance in the circulation within, the circulation in the skin over the part also varies from normal to correspond. The application of dry hot air raises the local temperature, sometimes as much as 8 degrees centigrade. Alcohol compresses likewise raise the temperature of the part, but constriction, inducing passive hyperemia, gradually reduces it.

29. **Action of Radium on Animal Tissue.**—Heineke's studies have demonstrated that the action of radium rays is approximately the same as that of the Roentgen rays. Lymphoid tissue is affected by them through the skin in the same way, but not to the same extent as with the Roentgen rays, unless the radium is brought into close contact, when a brief exposure will induce astonishingly extensive changes in the lymphoid tissue, apparent in a few hours.

31. **A Giant Ovarian Cystoma.**—Zacharias tabulates 14 of these giant tumors from the literature, including Barlow's case, in which the total weight of the tumor was 135 kilograms, more than 270 pounds. He describes a case personally observed in which the distance between the xiphoid process and the symphysis was 110 cm. and the circumference of the abdomen 187 cm., over two yards. The patient was a small, thin woman, but she weighed 264 pounds before evacuation of the cyst and 125 pounds afterward. The weight of the fluid evacuated must thus have been about 139 pounds. An exploratory laparotomy is advisable when an operation is contemplated, in order to discover a point for the incision where there are no adhesions. If extirpation is found impossible, repeated puncture is the next resource, but the fluid reaccumulates constantly in most cases and the intervals have to be made shorter and shorter. It is possible by this means to keep the patients for years in comparative health. Ford thus tapped a cystoma forty-nine times in five years, withdrawing 2,786 pints. Wagner reports 299 punctures during eight years in one case, withdrawing 9,867 pounds of fluid contents.

32. **"Steeple Skull" and Optic Nerve Atrophy.**—Velhagen has had occasion to observe 3 cases in which the skull tapered upward, causing the orbits to be abnormally shallow, and inducing atrophy of the optic nerve. He theorizes that this atrophy may be due partially to the excessive bone growth in these parts, and partially to the facts that the skull attains its principal growth in the period terminating with the seventh year and that a large number of ossifying centers are grouped at the small end of the orbit funnel. His patients were 6, 17 and 23 years old, and the eyeballs protruded to a marked extent in each case. They applied for relief from the typical symptoms of choked disc. Friedenwald found 12 of these "steeple skulls" among 19 cases of visual disturbances accompanying skull deformities. In the cases described the symptoms of choked disc became suddenly aggravated and, as suddenly, took an unexpected turn for the better. The visual disturbances may subside completely if the cranial deformity is not very pronounced. The bone growth in the part is liable to become so excessive that the "physiologic congestion" of normal growth becomes so intense that exudation results, with consecutive ocular disturbances. They subside as the exudate is reabsorbed.

36. **History of Medicine and Hippocrates.**—Roth remarks that the question whether Hippocrates or several authors wrote the great work which we call by his name can be decided only by the discovery of works preceding or contemporaneous with him. None is known to date. It is the most ancient and the only monument of Grecian medicine, and its contradictions and problems can be solved only by study of its pages by some physician familiar with the history of medicine. Professional philologists or historians are not required for the task. Roth sketches the influence of Hippocrates' writings on the history of medicine.

Wiener klinische Wochenschrift.

Last indexed page 289.

37 (XVII, No. 25.) New, Independent Exanthem. D. Popischil (Vienna).—Ein neues als selbständig erkanntes akutes Exanthem.
38 *Klinischer Beitrag zum Hydrocephalus syphilitischen Ursprungs. D. Galatti.
39 *Ueber einen Wangen-Tumor (of cheek). W. Wienert.
40 Das Neue physiologische Institut in Vienna. S. Exner.
41 *Pseudo-Hermaphroditismus. N. Swoboda. From society report.
42 (No. 26.) *Ueber die Sekundar-Infektion bei Tuberkulose. J. Sorgo (Alland).
43 *Zur Kritik der Pilzvergiftungen (mushroom poisoning). J. Hockauf.
44 Neuritis bei einem unter Serum-Behandlung geheilten Fall von Tetanus traumaticus. V. Grünberger.
45 Ueber bazilläre Dysenterie, speziell im Kindesalter. K. Leiner.
46 Hydrophobia in Germany. C. Sternberg.—"Die Tollwut in Deutschland und ihre Bekämpfung."
47 (No. 27.) *Ueber experimentelle Leber-Cirrhose. G. Joannovics.
48 Ueber 2 Fälle von Pulmonal-Stenose. G. Pommer.
49 *Superinfektion und Primär-Affekt. L. Detre-Deutsch.
50 *Struma und Tetanie. J. Jacobi.
51 Gedächtnissrede auf Otto Kahler. F. Kraus.
52 (No. 28.) *Bericht über die von der erweiterten Uterus Carcinoma Operation zu Erwartenden Dauer-Erfolge (remote results of more extensive operating). E. Wertheim.
53 *Nieren-Chirurgie und funktionelle Diagnostik (of kidneys). G. Kapsammer.
54 Radio-Aktivität der Karlsbader Thermen. A. Herrmann and F. Pesendorfer.
55 Biologische Reaktionen mit Bandwurm-Extrakt (of tapeworm). R. Fleckseder.
56 2 Fälle von subkutaner Zerreissung des Musculus biceps brachii (laceration of). B. Hahn.
57 (No. 29.) Experimental-Untersuchungen über die Folgen parenteraler Einverleibung von Pferdeserum (parents treated with horse serum). R. Dehne and F. Hamburger.
58 Ueber abdominelle Infektionen mit Mikrococcus tetragenus. R. Müller.
59 *Stools in Cholelithiasis. von Oefele.—Der Kot bei Gallensteinen.
60 (No. 30.) *Ueber Behandlung des endemischen Kretinismus mit Schilddrüsen-Substanz (thyroid). J. Wagner von Jauregg. Official report.
61 Diabetes in Relation to Kidney Affections. B. Vas.—Der Diabetes in Verhältnis zu den Albuminurien bezw. Nierenkrankheiten.
62 Hypersusceptibility of Tuberculous Animals. O. Bail (Prague).—Ueberempfindlichkeit bei tuberkulösen Tieren.
63 (No. 31.) Consequences of Parental Injection of Various Albuminoids. F. Hamburger and A. v. Reuss.—Die Folgen parenteraler Infektion von verschiedenen genuinen Eiweiskörpern.
64 Ueber die Gruber-Widalsche Reaktion bei Ikterus. V. Zevi.
65 *Ueber Botulismus: 3 geheilte Fälle von Wurstvergiftung (sausage poisoning). O. Pelzl (Budapest).
66 Verwechslung von Enzianwurzel mit Belladonnawurzel (confusion of gentian and belladonna root). J. Hockauf.
67 Pemphigus des Oesophagus. R. Tamerl. (Commenced in No. 29.)

38. **Hydrocephalus of Syphilitic Origin.**—Galatti describes a family with a syphilitic taint which manifested itself in an early hydrocephalus. It was not recognized in the first of the 3 children, and the child succumbed to marasmus. Energetic

nercurial treatment restored the other children to health. The heads were all within normal limits, merely rather large, a rapid increase in size having been noted. Attacks of screaming and restlessness in early infancy were retrospectively regarded as further evidence of hydrocephalus. The case emphasizes the little dependence that can be placed on parents' statements—both scouting the idea of a possible syphilitic origin for the symptoms observed in the first fatal case in the family. Galatti advocates immediate mercurial treatment in every case of hydrocephalus of uncertain origin. The Neapolitan school treats every case of hydrocephalus with inunctions, and the successful results observed are probably due to the fact that so large a proportion are of syphilitic origin.

39. **Cystadenoma Papillare.**—Wienert reports and illustrates what he believes is a hitherto undescribed tumor, a papillary cystadenoma originating in the outlets of the glands in the mucosa of the cheek, with cystic degeneration.

41. **Pseudo-Hermaphroditism.**—Swoboda remarks that male pseudo-hermaphroditism is of much more frequent occurrence than the female, and yet, in doubtful cases, physicians generally advise that the child should be brought up as a girl. He protests against this practice, thinking that the arguments are all in favor of bringing such children up as boys, if the parents refuse their consent to a diagnostic operation, or one proves indecisive. He urges legislation to recognize, besides males and females, persons of an "indeterminate sex." There used to be a law in Prussia allowing persons belonging to this category to choose for themselves, on reaching their majority, the sex to which they should nominally belong. This law has been repealed, but he thinks it is better than the present law, according to which such a person runs the risk of being referred to one sex or the other in turn by different physicians who may examine him in succession.

42. **Secondary Infection in Tuberculosis.**—Sorgo states that 10 febrile tuberculous subjects were examined for the supposed secondary infection. In 9, pure cultures of the tubercle bacilli were obtained, and in only 1 did the findings indicate mixed infection.

43. **Mushroom Poisoning.**—Hockauf writes from considerable personal experience and acquaintance, presenting an extensive study of mushroom poisoning as observed in Austria.

47. **Experimental Cirrhosis of the Liver.**—Joannovics was able to induce lesions, similar to those in man, by administering to guinea-pigs ammonium carbaminate and carbonate by the mouth, by inhalation of alcohol, repeated subcutaneous injections of chloroform, and by the action of poisons like toluylendiamin which destroy the red corpuscles and indirectly induce icterus and lesions in the liver tissue.

49. **Super-Infection and Primary Lesion.**—Detre-Deutsch is chief of the Jenner-Pasteur Institute at Budapest, and has had fine opportunities for the research described. It was undertaken to study the question of super-infection in syphilis. We know that a syphilitic subject can not acquire the primary bubo again. This has been assumed to mean that he was immune to reinfection, but the results of the research described show the matter in another light. They demonstrate that the initial symptoms induced by a virus in an already infected subject may differ widely from the initial symptoms observed in the primary infection. The presence or absence of the initial symptoms is, therefore, no criterion as to the success or failure of a superposed inoculation. The altered biochemistry of the organism may cause the primary symptom-complex to vary from the standard type as effectually as in case of acquired immunity. The animal organism may have acquired a super-infection notwithstanding that the typical initial symptoms of a new infection are entirely absent. The research was conducted with tuberculosis on guinea-pigs—as many of the conditions approximate those observed in human syphilis.

50. **Struma and Tetany.**—Jacobi has observed coincident struma and tetany in a mother and 2 children in a working family. The children were 19 and 15 years old when the tetany developed. In a fourth case the tetany developed and recurred only during pregnancies, the patient exhibiting constantly a mild form of exophthalmic goiter. This case confirms the assumption of a connection between the thyroid gland and the tetany.

52. **Remote Results After Extensive Uterine Cancer Operations.**—It is now four years since Wertheim proclaimed the necessity for more radical extirpation in cases of cancer of the uterus. He now announces from his six years' experience that the remote results are incomparably better since he has extended the operation. Out of 14 cases, representing an operability of 29.2 per cent., 9 are free from recurrence after four years. Out of 31 cases, representing an operability of 45 per cent., 19 are free from recurrence after three years. Out of 43 cases, representing an operability of 51 per cent., 26 are free from recurrence after two years. In the cases of recurrence the new growth always originated in the iliac glands. He has never found one in the inguinal glands. It is impossible to remove all the glands, and the superiority of his remote results is evidently due to his more thorough extirpation of the cancer itself. As soon as he adopted his technic of more extensive operating, the proportion of operable cases increased from 29 to 45 and 51 per cent. He never operates through the vagina except in case of incipient cancroid of the portio vaginalis. He believes in extirpating the glands as completely as possible, if only from the prognostic standpoint. Recurrence was noted in less than a third of the cases in which the extirpated glands showed no trace of cancer.

53. **Functional Diagnosis of the Kidneys.**—Kapsammer denies that cryoscopy of the urine has any diagnostic value beyond that of a mere hint that something is possibly wrong when the freezing-point is much below normal. He cites a number of instances from his experience to show how misleading it is liable to be. In a case of bilateral pyelonephritis, for example, the freezing-point of the urine was, left, —1.17 C., and, right, —1.82. In a healthy subject he found the figures respectively —.40 and —.50 C. Such anomalies may be due to polyuria of one kidney, and, to guard against false deductions, the amount of urine secreted by each kidney during a given period should be determined, if possible. In another case there was bilateral, gonorrheal pyelitis and stones in the right kidney, and yet the freezing-point of the blood was —.56, the normal figure, as also in another subject, a man with bilateral renal tuberculosis. In another patient it was also normal, although the operation revealed bilateral pyelitis, the left kidney reduced to a loose sack whose walls were nothing but a layer of kidney parenchyma not more than 1 to 2 mm. thick. The right kidney was contracted and much inflamed, only one-fifth of its substance being capable of functioning. The Voelcker-Joseph indigo carmine test has established its value for revealing the mouths of the ureters, for study of the type of the secretion, and, associated with catheterization, is a valuable functional, diagnostic measure, much superior to the methylene blue test. Kapsammer modifies the phloridzin test and has thus applied it in 70 cases. Thirty of the patients were operated on and the findings exactly confirmed those of the test in every instance. The main point for the diagnosis is the interval before the glycosuria appears. He makes a subcutaneous injection of .01 gm. phloridzin in an aqueous solution, just boiled, so that it is still warm. Sugar appears after twelve to fifteen minutes in normal subjects. If it does not appear until after twenty to thirty minutes, the kidney is somewhat impaired, but still able to assume the total function. If no sugar appears until after thirty minutes, the conditions forbid nephrectomy. In a number of instances this test was the only one that could be relied on as an indication for surgical intervention. This was recognized too late for some of the cases—the findings at the operation confirming the results of the test which had not been heeded by the surgeon. The greatest benefit from these new functional tests—at the head of which he places simultaneous catheterization of both ureters—is in the possibility of an early diagnosis, and enlargement of the sphere of nephrectomy at the expense of nephrotomy. He adds in conclusion that we need not dread any reflex anuria of the second, sound kidney. The anuria noted and assumed to be of this nature is always in reality due to insufficiency of the second kidney, already

diseased. For the Voelcker-Joseph test, see page 69, of the last volume.

59. **Feces in Cholelithiasis.**—The results of 85 examinations of feces are tabulated. They indicate that the composition of the feces varies materially from normal in case of stoppage of the flow of bile or a supply of abnormal bile.

60. **Thyroid Treatment of Cretins.**—Seventy-two cases of endemic cretinism improved to a remarkable extent under mild thyroid treatment. The majority of the subjects were restored apparently to normal conditions.

65. **Three Cured Cases of Meat Poisoning.**—Pelzl found high irrigation of the intestines, with some irritating substance, such as glycerin or magnesium sulphate in the water, the best means to promote the removal of the cause and induce copious stools. Calomel and other purges afforded no relief. Another extremely important measure was the prompt resort to artificial feeding through the stomach tube, which abolished the distressing swallowing movements, liable to induce foreign body pneumonia or death from suffocation. The mechanical stimulus from the stomach tube and the moistening of the esophagus improved conditions to such an extent that fluids could be safely ingested in two days. A favorable effect was also obtained from pilocarpin, which was given throughout the week, 20 drops of a 1 per cent. solution by the mouth every morning. No indications of collapse were observed with this dosage, but they followed a warm bath. The diet was at first milk, with a little wine, but as soon as the paralysis of the swallowing mechanism was overcome, a strengthening diet was taken. Moist sausages and other moist meat conserves are much more liable to cause meat poisoning than the dry. Pelzl reviews the literature and explains the symptoms of botulism observed in his 3 cases as due to the action of the poison on the nuclear region from the end of the third ventricle to the beginning of the spinal cord in the neck. He gives a diagram to sustain this assumption, grouping the symptoms in 7 phases, appearing in turn, as 1, mild gastrointestinal disturbances, paresis of the intestines in 1 subject and vomiting and diarrhea in the others; 2, extreme dryness of skin, mouth and conjunctivæ; 3, paralysis of pharynx and esophagus muscles; 4, ditto of ocular muscles; 5, reflex paralysis of muscles used in closing the lids, coughing, vomiting, etc.; 6, general weakness of all the muscles, pallor, emaciation, and 7, paresis of the bladder muscles. The gastrointestinal symptoms were in inverse proportion to the intensity of the poisoning. The essential symptoms of the botulism did not appear until thirty-six hours after partaking of the poisonous meat. It was in the form of sausage, and had been well cooked just before being eaten. There was nothing to suggest to the sight, taste or smell that the sausages were spoiled. The ocular disturbances were the first symptoms that brought the three soldiers to the physician, about twelve days after eating the sausages, the three previous phases of the poisoning having been borne without interfering materially with their military duties. As will be noted, the clinical histories differ in several points from those previously on record.

Gazzetta degli Ospedali, Milan.

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68 (XXV, No. 40.) •Il sintoma di Kernig nella sciatica. A. Plessi.
69 Sulla febbre ittero ematurica da quinina. A. Brancati.
70 Ricerche sperimentali sull' eliminazione dell' ammoniaca nell' urina. C. Ortali.
71 •L'influenza del trattamento calcareo sul decorso della tubercolosi sperimentale. A. Michelazzi.
72 (No. 43.) Influenza dell' attività muscolare sulla distribuzione del sangue alla periferia. C. Cesarini.
73 •Nuovo contributo alla conoscenza dei sieri citotossico. S. Sartirani (Turin).
74 •Due casi di trachoma trattati coi raggi di Röntgen. Ruggero Pardo.
75 Due casi di typho anomalo. M. Ragazzi.
76 Di un inizio anormale della polmonite crupale. G. Antonucci.
77 (No. 46.) •Sahli's Test of Pancreas Functioning. G. Galli.—Va'ore diagnostico della prova di Sahli per la funzione pancreatica.
78 Per la diagnosi di rene mobile (movable kidney). A. Bocchi.
79 Le afasie motorie. G. Matteucci.
80 I fegato infettivo acuto in una forma morbosa non ancora cognita (new form of infectious liver). S. Pascoletti.
81 Guarigione di un caso di tetano con sostanza cerebrale (recovery). E. de Benedetti.
82 •Due anni di profilassi malarica tra gli impiegati della rete ferroviaria dell' agro cerignolano (malaria prophylaxis on Italian railway). F. Buono.

68. **Kernig's Sign in Sciatica.**—Plessi observed this sign in a typical form in 2 cases of sciatica; in both instances it vanished with recovery. Abadie has stated that he found that this sign persisted in 3 cases after spinal cocainization had abolished all feeling in the parts. In his cases the slow dropping of the cerebrospinal fluid and its normal composition showed that the meninges were intact. Plessi thinks that he probably had not induced complete anesthesia of the parts, and that sensibility was retained in certain fibers, enough to induce this "reaction of defence," the sign called by Kernig's name.

71. **Calcium Treatment of Tuberculosis.**—Michelazzi restricts this report to his experimental research, not entering on his clinical experiences. He commenced to treat experimental tuberculosis with calcium salts in 1902. All the control animals have died, while only 9 died of the 30 rabbits and guinea-pigs treated with 2 to 3 gm. a day of calcium phosphate, mixed with their food, and supplemented by repeated daily injections of lime water. The tubercles in the animals were found more or less calcified or walled off by a fibrous enclosure. The rabbits were not only clinically cured, but the pathologic anatomy also demonstrated a cure. Some rabbits were kept alive for eight months, and they were apparently in the best of health. The results were less evident in the guinea-pigs, but still sufficiently promising. A characteristic cirrhosis of the liver was manifest in these animals and inoculation of other guinea-pigs from their lesions gave positive results. He thinks this difference in the results observed in the rabbits and the guinea-pigs may be due to the fact that the former were inoculated with tuberculosis by intravenous injection, the latter by subcutaneous injection into the abdomen. The calcium salts are deposited at the points of inflammation and afford a mechanical stimulus which starts and aids the process of repair, with a probable additional antagonistic action on the tubercle bacillus.

73. **New Research on Cytotoxins.**—Sartirana has previously announced that the injection of defibrinated blood alternating with an emulsion of brain substance (guinea-pig), induces the production of a powerful hemolytic and neurotoxic serum. On the other hand, alternate injections of defibrinated blood and of an extract of suprarenal capsule did not confer any hemolytic power on the serum, and only a slight suprarenal-toxic action. These observations suggested that the capsule extract and the defibrinated blood annulled each other's action. He reports here the results of a number of varying experiments in this line on guinea-pigs, rabbits and fowls, using the organs from the first. No cytotoxic power was conferred on the serum of rabbits repeatedly injected with an emulsion of guinea-pigs' suprarenal capsules. Contemporaneous injection of brain substance and blood conferred both cytolytic and hemolytic power on the serum. He thinks that this new technic of mixing various emulsions of different organs, combining or alternating them, is liable to solve some of the problems in regard to alexins, etc., as well as those of cytolysis.

74. **Radiotherapy of Trachoma.**—The 2 cases described were of long standing and rebellious to all the usual measures. Six exposures, with a total of 44 minutes in one case and of 47 in the other, caused such marked improvement, both subjectively and objectively, that a cure is confidently anticipated. The tube had a spark length of 650 to 700 mm.; the distance varied from 30 to 45 cm.; the applications were from 4 to 10 minutes at a time, and only one eye was treated, the eyeball protected with a sheet of lead at some of the sittings.

77. **Sahli's Test of Pancreas Functioning.**—A glutoid capsule, made of gelatin hardened with formaldehyd, is not affected by the organic juices except the pancreatic. A capsule of this kind, containing iodoform, is supposed to pass unchanged through the alimentary canal until it encounters the pancreatic juice, when it is rapidly dissolved and the absorbed iodoform can be detected in the saliva and urine. Sahli has proposed this technic as a means of testing pancreas functioning, but Galli reports from Baccelli's clinic a case of cancer of

the pancreas which renders dubious the reliability of this test. There could not have been any pancreatic juice as the organ was entirely destroyed, but the capsules were dissolved as effectually as in health.

82. **Prophylaxis of Malaria in Italy.**—Since the houses of the employes of a certain railroad have been screened, the number of cases of malaria has dropped from 69 in 1900 to 4 in 1903, while a control line has had 33, 40, 33 and 24 cases during the same interval. The railroad officials comment, also, with delight on the improvement in the general health and working capacity consequent on the refreshing sleep and well-ventilated rooms free from the plague of mosquitoes. [In the Italian army, quinin prophylaxis has reduced the number of cases of malaria from 404 recurrences and 312 new cases—the figures in 1898—to 155 and 87, respectively, in 1903. The total number of persons thus "prophylacted" in 1903 was 19,021, and only 5.6 per cent. showed symptoms of malaria.—ED.]

Russkii Vratch, St. Petersburg.

Last indexed page 437.

83 (II, No. 44.) Physical Measures in Various Affections. I. V. Zabludowsky (Berlin).—Physitcheskiya uprazhnenia pri bolyeznennykh processakh.
84 *Signs of Tetany. R. A. Peters.—2 novykh i 1 starii priznak tetanii- ikh primyenenie k raspoznavaniiu nervnykh bolyeznei u dyetei i k voprosu o "skrytoi tetanii." (Commenced in No. 43.)
85 *Raw Meat Treatment of Tuberculosis. B. S. Knotte.—Zomoterapi bugortchatki legkikh.
86 Value of Cystoscopy and Catheterization of Ureters. B. G. Sheftel.—Znatchenie cystoscopii i catheterizatzii motchetotchnikov voobshtche e dlya chirurgii potchek v oeobennosti (s pryedyavlenieum ureterocystoscopa Nitze).
87 Ophthalmologic Notes on Foreign Bodies. S. P. Roshtchevsky.—Iz ophthalm. nabliudenii.
88 (No. 45.) Results of Modern Otology. N. P. Trophimoff.—Uspyekhi sovremennoi otiatrii.
89 *Case of Cirrhosis of Liver Without Ascites. E. A. Ratner.—Bezvodyanotchnii vennii tzirroz petcheni.
90 Case of Successful Arthrodesis in Treatment of Paralysis of Shoulder. Heikuing.—O lyetchenii paralititcheskago boltaiushtchagosa pietchevogo sustava postredstvom iskysstvennago ankilozirovaniya (artrodeza).
91 (No. 46.) Rare Case of Vascular Murmur in Liver Region. A. K. Zubert.—Ryedkii slutchai sosudistago shuma v oblasti petcheni.
92 Cancerous Degeneration of Ovarian Dermoid Cysts. T. V. Zalensky.—O rakovom pererozhdenii kozhevikov yaitchnika.
93 *Vomiting of Blood in Peritonitis. V. P. Gerasimovitch.—O krovavoi rvotye pri peritonitye.
94 *Perioditcheskaya paraplegia. A. Shtchepinsky.
95 (No. 47.) *Double Heart Beat. O. F. Helsingius.—K voprosu ob udvoenii verkhushetchnago toltchka serdtza.
96 *Relations Between Physical and Mental Development. O. D. Enko.—O svyazi mezhdu physitcheskim i umstvennym razvitiem.

84. **Tetany in Children.**—Peters expatiates on the importance of the information to be derived from two new signs which, in connection with Trousseau's symptom, enable even latent tetany to be differentiated. The "jumping-jack sign," is particularly valuable. This is the jerking induced in the arms and legs when the galvanic current is turned on, the anode on the chest and the cathode on the cervical or lumbar enlargements. The other sign—Quincke's lumbar puncture—has direct therapeutic as well as diagnostic value. After the spinal canal has been relieved of the excess of cerebrospinal fluid, it is impossible to elicit the jumping-jack sign for some time. His work is based on examination of 600 children between four months and three years old. Latent tetany was discovered in 22, associated with evidences of rachitis in 17, but not dependent on the latter, the coincidence being merely casual, he is convinced. Examination of 77 children with a severe form of rachitis revealed latent tetany in only a single one. Among the children with latent tetany were a number with excellent digestion, normally nourished, while, on the other hand, no signs of it could be detected in a large number of cases of severe debility and infectious processes. All the signs and the tonic character of the spasms indicate a spinal origin for them. The jumping-jack and the Trousseau signs indicate a localization of the process in the region of the roots, while the latter sign suggests that the process develops on the side toward the dura, where ganglia accompany the roots. The jumping-jack sign on galvanization of the cervical and lumbar enlargements, together with the increased amount of cerebrospinal fluid, indicates further that other tissues besides the nerve elements participate in the process, the bones, muscles and meninges. Hypertension alone, without other signs, has no differential significance, but the Trousseau sign is pathognomonic, or at least, when it is absent, tetany can be diagnosed only when the other signs are pronounced, either the jumping-jack or the Chvostek, Erb or Bekhtereff signs or the Timikhoff reaction to the galvanic current in the peripheral nerves and muscles. In case of organic affections of the spinal cord or brain, none of these signs is observed, nor in organic affections of the peripheral nerves. In one case the jumping jack sign was noted with some rigidity in the muscles of the back of the neck, throwing doubt on the correctness of the diagnosis, and suggesting rather poliomyelitis or dystrophy, with compression of the cord in the cervical region. In fact, digital examination through the mouth revealed a cystic abscess on the anterior aspect of the spine, a result of spondylitis of the upper cervical vertebræ. In 2 cases of epilepsy the occurrence of the jumping-jack symptom, with excessive pressure in the cerebrospinal fluid, suggested the assumption that, besides the cerebral affection, there was also some complication on the part of the spinal cord. Some of these signs of tetany were observed in 2 cases of hysteria. In 5 out of 9 cases of eclampsia the positive findings of these 3 signs revealed the presence of tetany. In respect to "latent tetany," he does not agree with those who regard it as a physiologic property of early childhood (Goltmann's spasmophilia). Latent tetany represents, *per se*, the participation of the spinal cord in the morbid process, but it may develop into the extreme type of eclampsia in which the symptoms seem to be exclusively cerebral. Latent and declared tetany should be accepted as a single morbid process, but latent tetany and rachitis are two distinct entities.

85. **Raw Meat in Treatment of Tuberculosis.**—Knotte summarizes the reports of this method of treating tuberculosis published by various authors, and then relates his own experience with over 30 patients. The first was a man of 30, of a consumptive family, infected with syphilis ten years before, which had required energetic specific treatment, suffering also from neurasthenia and exposed to severe climatic vicissitudes. Notwithstanding all these unfavorable circumstances, the patient made marked improvement under the "zomotherapy," according to Héricourt and Richet's directions. The other patients were put on the raw meat for longer or shorter periods, and all were objectively improved. Eight patients followed the course systematically for from three to six months, about 300 to 350 gm. of raw meat being taken as the daily dose. His experience confirms the efficacy of zomotherapy as a powerful aid in the treatment of tuberculosis, especially when it is impossible for the patient to seek a more favorable climate. His patients all improved both objectively and subjectively, but none was actually cured. The liver and kidneys must be watched during this treatment to prevent disturbance in their functions from the raw meat. When this is done, zomotherapy can be regarded as an efficient builder up, with a certain specific action on the morbid process, the improved nutrition, in turn, having a further specific action on the infection. Richet believes that the elements of the meat combine with the cells of the body in such a way that the latter lose their chemical affinity for the tuberculous toxins.

89. **Cirrhosis of the Liver Without Ascites.**—The interest in the case described lies in the fact that Nature had established a collateral circulation such as is sought by the Talma operation. The result is that there has been no ascites during the eight or nine years of the liver affection. The enlarged veins of the collateral circulation can be distinctly traced through the skin over and on both sides of the median line from the groin nearly to the mammary line. The patient was a fairly well-nourished man of 41; the spleen was not enlarged.

93. **Hematemesis in Peritonitis.**—Gerasimovitch concludes from an experience with 11 patients and culling of the literature on the subject, that toxic hematemesis is not a sign of appendicitis, as Dieulafoy contends, but of general septic purulent peritonitis. In case of appendicitis without peritonitis it

is a sign that the bacteria have passed from the appendix into the stomach and indicates septicemia. In the first category the hematemesis is due to diapedesis of blood, the erosions being secondary. Besides the toxic changes in the walls of the vessels, the paralysis of the vasomotor system of the stomach, local congestion and increase in the blood pressure, all co-operate in the production of the hemorrhage in the stomach. Toxic hematemesis may be observed both in children and adults, and is a bad omen.

94. **Periodic Paralysis.**—Shtchepinsky has collected the data obtainable in the literature, and from this and a case personally observed he draws the clinical picture of periodically recurring paraplegia. He also discusses its nature, treatment, etc. The usual remedies for nervous affections are generally ineffectual. The essence of the trouble is still a mystery.

95. **Duplication of the Heart Beat.**—The case described can not be classed with Riegel's pulsus bigeminus nor with Leyden's hemisystolia, although it suggested both of them. The patient was a man of 30, with hypertrophy of both ventricles, mitral and aortic insufficiency, endocarditis and irregular rhythm. Death occurred in asystolia and general heart failure. The heart was found in fatty degeneration, and there was a second, supernumerary apex. It was the apex of the right ventricle, and, like a small aneurism, it increased in size at the end of the diastole under the impulse of the blood wave, becoming apparent in its interspace to the finger and eye, and thus inducing the first half of the double superficial heart beat. The apex of the heart was practically split into two parts, the walls of the right ventricle tapering to a point, the pouch consisting merely of endocardium and pericardium with a thin layer of fat cells between them. Doll has reported a somewhat similar case, although the left heart was the site of the anomaly in his patient. This is the only other case of which the author has knowledge. They show that in cases of double heart beat the causes may be various. Most frequently, however, the supernumerary beat is "active," and is caused by the manifestations of bigeminus of the heart. But cases do occur in which it has a "passive" character, and is due merely to some individual peculiarity.

96. **Relations Between Physical and Intellectual Development.**—Endo tabulates the findings of examination of hundreds of girls in a large school in St. Petersburg, comparing their standing in the classes with their physical development. He found it to be the rule that the girls who developed physically comparatively young were equally precocious in their studies. The girls who menstruated at an early age usually graduated younger than their mates.

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97 (XI, No. 10.) Problems of Medical Education. W. Strange.—Zadatchi med. obrazovaniya.

98 Influence of Veronal on Animal Organism. A. Korableff.—O vliyanii veronala na zhivotnii organizm.

99 Value of Nitrate of Silver in Gastric Affections. V. Mandelberg.—Arg. nitricum pri terapii bolyeznei zheludka.

100 *Yeast in Diabetes. G. A. Nandelstedt.—O primyenenii sukhikh prossovannykh drozhzhei pri sakharnom diabetye.

101 (No. 11.) Importance of Early Intervention in Case of Suppuration in the Lungs. G. Zeidler.—Ob operativnom vmyeshatelstvye pri legotchnykh nagnoenlyakh.

102 *Necessity for Phosphorus in Food. E. V. Ototzkaya.—O soderzhanii phosphora v pishtchevykh produktakh i o znatchenii ego dlya organizma. (Commenced in No. 10.)

103 Two Cases of Acute Mania After Grippe; Recovery. V. V. Stavsky.—2 slutchaya grippa, oslozhnivshievya ostrym pomyeshatelstvom.

104 (No. 12.) O vliyanii pervikh myesyatzey kazarmennoi zhizni na physlycheskoe razvitie i zdorove molodykh soldat (first months of military service). T. Glikman.

105 (No. 13.) Local Statistical Study of Tuberculosis. S. Geropitomtzeff.—Bugortchatka v Parafievskoi volosti. (Commenced in No. 12.)

106 (No. 14.) Power of Absorption of Pleura in Inflammations with Effusion. S. K. Gogitidze.—K voprosu o vsasyvaiushtchei sposobnosti plevry pri vypotnykh vospaleniyakh. (Commenced in No. 13.)

107 Individual Prophylaxis of Venereal Affections. L. Jakobson.—Tchastnaya prophylaktika vener. bolyeznei. (Commenced in No. 10.)

108 Case of Acute Yellow Atrophy of Liver. S. Stankevitch.—Slutchai ostro zheltoi atrophie petcheni. (Commenced in No. 12.)

109 *Treatment of Diarrhea with Extract of Green Oranges V. N. Vorontzoff.—O letchenli ponosov, etc., (fructus aurantii immaturus).

100. **Compressed Yeast in Diabetes.**—Nandelstedt endorses Cassaet's experience in regard to the benefit to be derived from the use of compressed yeast in diabetes. The thirst is reduced, the glycosuria subsides and these results persist even under moderate ingestion of carbohydrates.

102. **Importance of Phosphorus in the Food.**—Ototzkaya proclaims that when the food does not contain the requisite physiologic proportion of phosphorus, the system suffers from phosphorus starvation. This is manifested in various ways, but chiefly in the nervous system. The normal proportion should be one part phosphoric acid to five parts nitrogen. The best means of determining the phosphorus balance is by the acidity of the urine. In case it shows phosphorus starvation, vegetables and milk should be ingested more freely or some preparation of phosphorus should be taken as a medicine or with the food. Phosphoric acid will be found useful and convenient for the latter purpose.

109. **Extract of Green Oranges in Diarrhea.**—Vorontzoff describes 4 cases in detail out of a larger experience to sustain his assertions in regard to the great efficacy of an extract of unripe oranges in the treatment of severe diarrheas. He has never heard of its application in dysentery, but it proved successful in several instances after failure of all the usual measures.

Books Received.

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interests of our readers.

PATHOLOGICAL TECHNIC. A Practical Manual for Workers in Pathological Histology and Bacteriology, Including Directions for the Performance of Autopsies and for Clinical Diagnosis by Laboratory Methods. By Frank Burr Mallory, A.M., M.D., Associate Professor of Pathology, Harvard University Medical School, and James Homer Wright, A.M., M.D., Director of the Clinico-Pathological Laboratory of the Massachusetts General Hospital. Third Edition, Revised and Enlarged, with 156 Illustrations. Cloth. Pp. 469. Price, $3.00 net. Philadelphia, New York and London: W. B. Saunders & Co. 1904.

A TEXT-BOOK OF MATERIA MEDICA. Including Laboratory Exercises in the Histologic and Chemic Examinations of Drugs. For Pharmaceutic and Medical Schools, and for Home Study. By Robert A. Hatcher, Ph.G., M.D., Instructor in Pharmacology in Cornell University Medical School of New York City; and Torald Sollmann, M.D., Assistant Professor in Pharmacology and Materia Medica in the Medical Department of the Western Reserve University of Cleveland. Illustrated. Flexible Leather. Pp. 400. Price, $2.00 net. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

SURGERY. A Manual for Students and Practitioners. Lea's Series of Medical Epitomes. By M. D'Arcy Magee, A.M., M.D., Demonstrator of Surgery and Lecturer on Minor Surgery; and Wallace Johnson, Ph.D., M.D., Demonstrator of Pathology and Bacteriology in Georgetown University Medical School, Washington, D. C. Cloth. Pp. 295, with 129 Engravings. Price, $1.00 net. Philadelphia and New York: Lea Brothers & Co. 1904.

APPLETON'S MEDICAL DICTIONARY. An Illustrated Dictionary of Medicine and Allied Subjects, in Which Are Given the Derivation, Accentuation and Definition of Terms Used Throughout the Entire Field of Medical Science. Edited by Frank P. Foster, M.D. Half Leather. Pp. 1,991. Price, $10.00. Thumb Index, $11.00. New York and London: D. Appleton & Co. 1904.

THE DEVELOPMENT AND ANATOMY OF THE PROSTATE GLAND, Together with an Account of Its Injuries and Diseases and Their Surgical Treatment. (The Health Scholarship Prize Essay.) By W. G. Richardson, M.B., B.S., F.R.C.S., Assistant Surgeon at the Royal Infirmary, Newcastle-on-Tyne. Cloth. Pp. 121. Price, $3.75 net. London: J. & A. Churchill. 1904.

THE PRINCIPLES OF HYGIENE. A Practical Manual for Students, Physicians and Health Officers. By D. H. Bergey, A.M., M.D., Assistant Professor of Bacteriology. Illustrated. Second Edition, Thoroughly Revised and Enlarged. Cloth. Pp. 536. Price, $3.00 net. Philadelphia, New York and London: W. B. Saunders & Co. 1904.

A HAND-BOOK OF SURGERY. For Students and Practitioners. By Frederick R. Griffith, M.D., Surgeon to the Bellevue Dispensary, New York City; Assistant Surgeon at the New York Polyclinic School and Hospital. 12mo, Volume of 579 Pages, Containing 417 Illustrations. Philadelphia, New York, London: W. B. Saunders & Co. 1904. Flexible Leather, $2.00 net.

THE PHYSIOLOGICAL FEEDING OF INFANTS. A Practical Hand Book of Infant Feeding, and Key to the "Physiological Nursery Chart." By Eric Pritchard, M.A., M.D. (Oxon.), M.R.C.P. (Lond.). Second Edition, Greatly Enlarged and Entirely Rewritten. Cloth. Pp. 202. Price, $1.50 net. Chicago: W. T. Keener & Co. 1904.

A TEXT-BOOK OF DISEASES OF WOMEN. By Charles B. Penrose, M.D., Ph.D., Formerly Professor of Gynecology in the University of Pennsylvania. With 225 Illustrations. Fifth Edition, Revised. Cloth. Pp. 550. Price, $3.75 net. Philadelphia, New York and London: W. B. Saunders & Co. 1904.